

**Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.

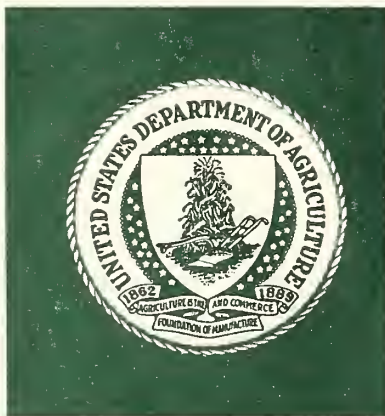




AD-33 Bookplate  
(1-63)

**NATIONAL**

**A  
G  
R  
I  
C  
U  
L  
T  
U  
R  
A  
L**



**LIBRARY**



A423.9

R313 Co

1962/63







TABLE OF CONTENTS

ANNUAL REPORTS

FISCAL YEAR 1963

Cooperative Plant Pest Control Programs

Report on Cooperative Plant Pest Control Gradication  
Programs of Interest to the Plant Boards

Special Report - New Infestations of Golden Nematoe by Years  
(Calendar year 1941 through fiscal year 1963)

Central Region Annual Report

Eastern Region Annual Report

Mexico Region Annual Report

Southern Region Annual Report

Western Region Annual Report





(\*---\*)

**COOPERATIVE**

**PLANT PEST CONTROL**

**PROGRAMS**

**FISCAL YEAR 1963**

Plant Pest Control Division  
Agricultural Research Service  
United States Department of Agriculture

RECEIVED  
FEB 11 1963  
LIBRARY

RECEIVED  
FEB 11 1963  
LIBRARY

U.S. DEPT. OF AGRICULTURE  
LIBRARY  
RECEIVED



**COOPERATIVE**

**PLANT PEST CONTROL**

**PROGRAMS**

**FISCAL YEAR 1963**

Plant Pest Control Division  
Agricultural Research Service  
United States Department of Agriculture

# C O N T E N T S

	Page
INTRODUCTION. . . . .	1
COOPERATIVE PROGRAM HIGHLIGHTS	
Fiscal Year 1963. . . . .	3
COOPERATIVE FEDERAL AND STATE PROGRAMS	
Barberry Eradication . . . . .	5
Boll Weevil. . . . .	5
Burrowing Nematode . . . . .	7
Cereal Leaf Beetle . . . . .	8
Citrus Blackfly. . . . .	10
European Chafer. . . . .	10
Golden Nematode. . . . .	11
Grasshopper. . . . .	12
Gypsy Moth . . . . .	12
Hoja Blanca. . . . .	14
Imported Fire Ant. . . . .	14
Japanese Beetle. . . . .	15
Khapra Beetle. . . . .	17
Mediterranean Fruit Fly. . . . .	18
Mexican Fruit Fly. . . . .	19
Mormon Cricket . . . . .	19
Phony Peach and Peach Mosaic . . . . .	20
Pink Bollworm. . . . .	20
Soybean Cyst Nematode. . . . .	21
Survey and Detection . . . . .	22
Sweetpotato Weevil . . . . .	22
White-fringed Beetle . . . . .	23
Witchweed. . . . .	24
SPECIAL SURVEYS . . . . .	25
FOREIGN TECHNICAL ASSISTANCE PROGRAM. . . . .	26

\* \* \* \* \*

## MAILING ADDRESS:

Plant Pest Control Division  
 Agricultural Research Service  
 United States Department of Agriculture  
 Federal Center Building  
 Hyattsville, Maryland 20781



## INTRODUCTION

Public clamor over pest control programs and the use of pesticides in general overshadowed any other single development in cooperative plant pest control work during fiscal year 1963. Concern over contamination of the total environment in relation to public health, wildlife and other values reached an unprecedented level during the period. Recent developments associated with this problem, and directly related to plant pest control work, may influence the future of cooperative Federal-State pest control programs.

President Kennedy released the Science Advisory Committee report on the use of pesticides May 14, 1963. Among other things, the committee recommended that provision be made on a continuing basis for (a) review of present and proposed Federal control and eradication programs to determine if, after consideration of benefits and risks, some programs should be modified or terminated, and (b) development and coordination of a monitoring program conducted by a Federal agency to obtain timely systematic data on pesticide residues in the total environment.

The U.S. Department of Agriculture has taken action to implement the above recommendations. A review of the control and eradication programs is being made by a group consisting of control, regulatory, and research personnel from the Agricultural Research Service, the Agricultural Marketing Service, and the Forest Service. Programs on which the largest amounts of pesticides are used are being considered first.

The Plant Pest Control Division has a plan underway to monitor the use of pesticides on cooperative Federal-State programs. Within limits of available personnel, funds and facilities, monitoring programs are being established as rapidly as possible. Monitoring programs placed in operation in 1963 included grasshopper control in Idaho in cooperation with the Idaho Game and Fish Commission, and cereal leaf beetle and Japanese beetle control in Michigan in cooperation with Michigan State University. The Entomology Research Division of ARS is also taking part in the Michigan Japanese beetle study. As the monitoring service develops, more State regulatory and research agencies will be asked to assist.

In addition to its other efforts, the Division has established Safety Officers in each of its regions and a Pesticide Safety Coordinator in Washington to reemphasize the need for care in handling all pesticides and application equipment.

The Senate's Humphrey-Ribicoff Committee is making a study of environmental health hazards and, more specifically, pesticides. This is a very comprehensive review of all aspects of the pesticides controversy. Secretary Freeman and Dr. M. R. Clarkson, Associate Administrator, ARS, have appeared before the committee as representatives of the Department.

The cooperative plant pest control programs are being reviewed again by the Federal Pest Control Review Board. Changes in some programs have overcome certain objections raised in the 1962 review. Consideration of

cooperative programs on which persistent type chemicals such as aldrin, dieldrin, and heptachlor are used, is being delayed pending a study of the current tolerances for these chemicals by a task force working at the request of the Food and Drug Administration. It seems apparent that there will be continuing concern over the use of some of the chlorinated hydrocarbon insecticides, and perhaps some restrictions. Consequently, PPC's methods improvement and research programs of cooperating agencies have accelerated their search for different chemicals or other methods of control for such pests as the European chafer, Japanese beetle, grasshoppers, and white-fringed beetle. The Review Board is performing an important function in coordinating the activities of the respective Federal agencies in which there is mutual interest.

COOPERATIVE PROGRAM HIGHLIGHTS  
Fiscal Year 1963

BARBERRY ERADICATION progressed with almost 7 million bushes eradicated during the year. An effective barrier zone apparently was established to halt spread of the BOLL WEEVIL into western cotton areas. Establishment of chemical barriers around Florida citrus groves infested with BURROWING NEMATODE are about three-fourths completed. The CEREAL LEAF BEETLE was found in additional counties of Indiana, Michigan, and in Ohio for the first time, and suppressive treatments were effective. During the year all known infestations of CITRUS BLACKFLY were cleared from the barrier zone between infested Mexico areas and citrus areas of the United States. The EUROPEAN CHAFER was discovered in Pennsylvania for the first time, and new infestations were found in the States already affected, with the exception of West Virginia where the previously infested area at Capon Bridge was removed from regulation.

GOLDEN NEMATODE eradication on Long Island, New York, continued to make progress. GRASSHOPPER INFESTATIONS were low in fiscal year 1963; infestations have not regained economic levels in many areas where cooperative controls were carried out in recent years. New formulations of non-persistent chemicals gave excellent control in experimental treatments. GYPSY MOTH buildup continued in parts of New York and New England States. All known infestations in New Jersey and Pennsylvania were treated. No gypsy moths were trapped in Michigan during the year. HOJA BLANCA disease and its vector were found in Florida in June and eradication is underway. The Federal Pest Control Review Board was highly complimentary on the successful development of mirex bait for IMPORTED FIRE ANT control. More than 1.5 million acres were treated with the bait in F.Y. 1963 with no complaints of loss to fish, wildlife, or other values.

JAPANESE BEETLE eradication in California reached an encouraging level in 1963; no new finds have been made there since July 1962. More than 108,000 acres were treated in other important outlying areas. The Federal Japanese beetle quarantine was extended to include Georgia, Indiana, Kentucky, and South Carolina in September 1962. KHAPRA BEETLE eradication appears more and more promising, the last specimens being found in July 1962. The MEDITERRANEAN FRUIT FLY campaign, begun in June 1962 in Florida, was successfully completed April 1963. The intensive detection program was continued, making possible quick elimination of any future local incipient infestations.

A MEXICAN FRUIT FLY specimen was collected in San Ysidro, California, July 1, the first in that area since 1957. Protective treatments and quarantine action in border areas have kept western citrus free of the pest. MORMON CRICKET control has progressed to a point where pest is being confined almost entirely to breeding grounds. Incidence of PHONY PEACH and PEACH MOSAIC disease has continued to decline during the year. Only one PINK BOLLWORM larva was found in the eradication area of Arizona during the year, necessitating treatment on only 223 acres. Several serious outbreaks of the pest developed in Texas. Effective programs in Arkansas and Louisiana led to the release of large areas from regulations in these States.

SOYBEAN CYST NEMATODE damage was evident in several affected States. Progress was made in the development of resistant soybean varieties. Three insects were discovered for the first time in the United States during the year through SURVEY AND DETECTION efforts. New approaches to SWEETPOTATO WEEVIL eradication served to strengthen the program. All known WHITE-FRINGED BEETLE infestations in Kentucky and Virginia were treated by June 30, 1963, however, population buildups were reported in many Southeastern States. Crop damage from WITCHWEED during 1962 season was almost completely absent.

-----  
Cooperative program operations for fiscal year 1963 are summarized on the following pages. More complete information on the Plant Pest Control Division and its programs is available in "Activities of the Plant Pest Control Division" ARS 81-10, April 1963.



## BARBERRY ERADICATION

The program to eradicate susceptible species of barberry throughout 19 Northern States continues to make good progress. Since the beginning of the program more than a million square miles have been cleared of barberry and placed on maintenance. There are now approximately 37,000 square miles remaining which will need one or more inspections to assure eradication. The more active programs are centered in Illinois, Iowa, Kansas, Michigan, Missouri, Ohio, Pennsylvania, Virginia, and Washington. During F.Y. 1963, 6,563,202 rust-susceptible barberry bushes were destroyed on 2,804 properties in 17 States. A total of 5,279 square miles was inspected and about one-half of this area was placed on maintenance.

The barberry eradication program is supported by the Black Stem Rust Quarantine. This requires the annual inspection of nurseries and dealer establishments to make sure no rust-susceptible barberries are sold within or shipped into eradication States. During the year more than 600 nurseries and dealers were inspected and qualified for certificates which permit the growing and sale of nonsusceptible stock.

The plant breeder, in developing stem rust resistant varieties of cereal grains, is continually confronted with the appearance of new races of the stem rust organism. In this country such important races as 15B and 56 of the wheat stem rust and races 7 and 8 of oat stem rust appeared first on grains in barberry infested areas or in collections of stem rust from the barberry. Canadian scientists have encountered this same problem and recently the appearance of new races of the oat stem rust stimulated interest in and planning for a barberry eradication program this year in Ontario Province. Canadian officials visited the Division's Washington office in the spring of 1963 to obtain detailed information on the conduct of the eradication work in this country. All known barberry bushes were destroyed years ago in Saskatchewan and Manitoba Provinces.

## BOLL WEEVIL

Since 1953, the boll weevil has been a serious limiting factor in cotton production in the Presidio Valley of Texas. It is believed that the weevil reached this area by migrating north along the Rio Conchos from central Mexico. This strain of weevil appears to be adapted to the hot, arid climate in the irrigated regions of the West. Spread of the boll weevil in southwestern Texas and bordering areas of Mexico is a threat to the cotton-producing areas of western Texas, New Mexico, Arizona, and California. The United States and Mexico have cooperated since 1961 in an effort to establish a barrier between the infested areas and non-infested areas to the West.

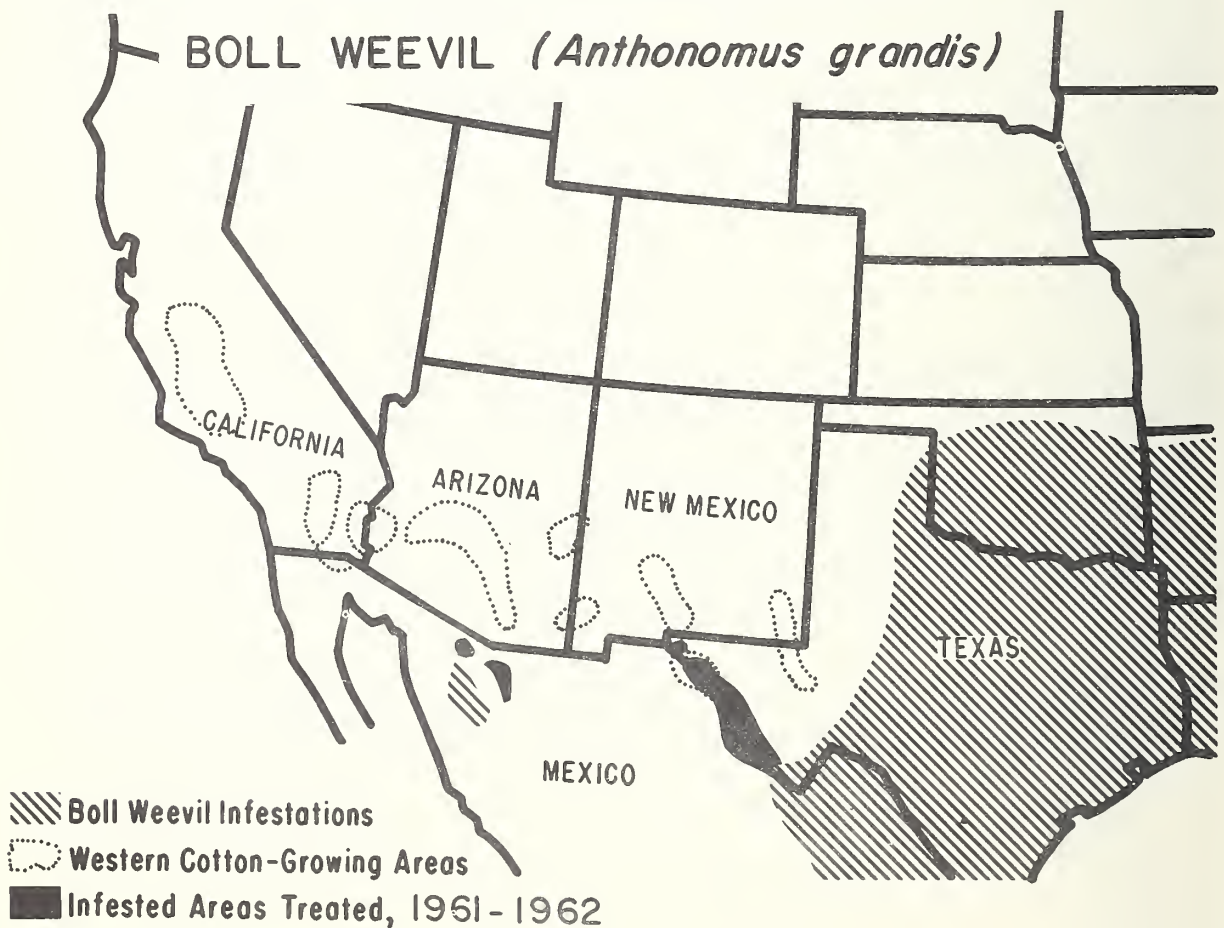
The work began in 1961 with the treatment of 2,400 acres of cotton along a 125-mile strip bordering the Rio Grande River in Mexico and Texas, between Ruidosa and Fort Quitman. This area was successfully treated



that year and again in 1962. In addition, 193 acres were treated in 1962 in the El Paso Valley and approximately 2,600 acres in northern Sonora, Mexico, south of Nogales, Arizona. The program in the fall of 1963 will involve treatment of the same areas that were treated in 1962.

In view of the extensive cotton acreage at El Paso and its strategic location, treatments were applied in the spring of 1963 at two locations where weevils were found last year. There has been a question for several years as to whether the infestation at El Paso is established or whether the boll weevil comes in annually. In an attempt to find an answer boll weevils were placed in hibernation cages in this area in October and November, 1962. No weevils survived in the cages. Weekly inspections were made in more than 70 cotton fields through June 14, 1963, in the El Paso area and no infestations were found. During the same period 60 fields were surveyed in Presidio County and 20 were found to be infested. Some of the untreated fields supported heavy populations. Only light infestations, however, were found where growers treated in this area in the fall of 1962. Surveys will be continued throughout the 1963 season in order to gain more information on this phase of the problem.

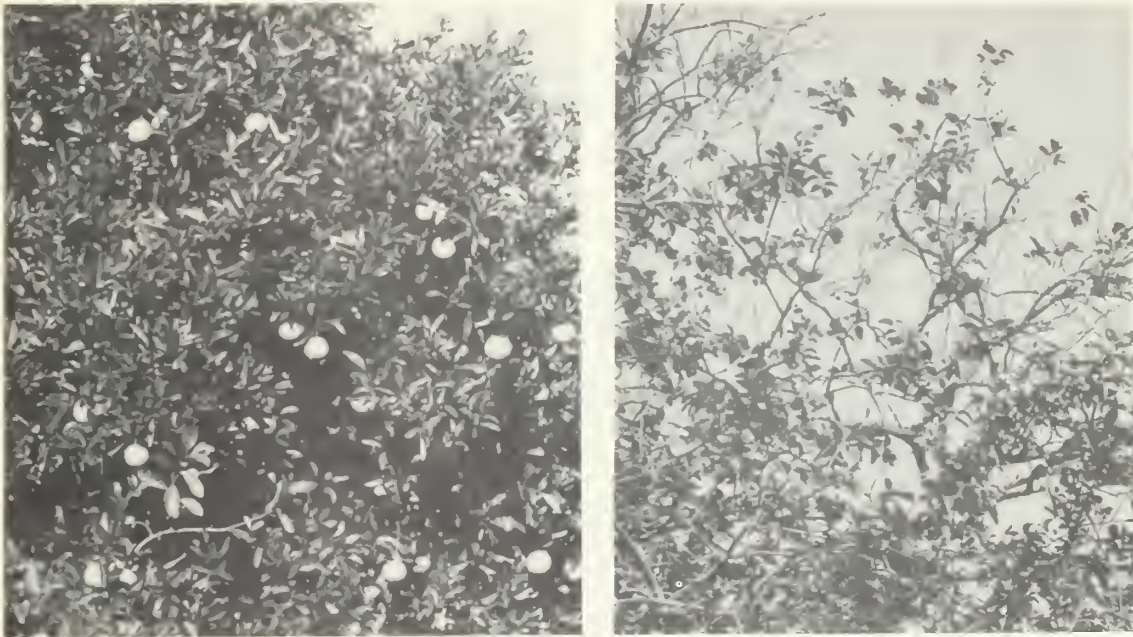
It appears that an effective barrier zone has been established to halt the spread of this destructive pest into the important cotton areas of the West. Close cooperation of all interests concerned will be required to maintain this protection area on a continuing basis.



## BURROWING NEMATODE

The burrowing nematode which poses a threat to the \$500 million citrus industry of Florida is being successfully held in check by the cooperative State-Federal control program. Under this program, chemical barriers are established around infestations to prevent spread through root grafts. This permits grove owners to continue to harvest citrus from the decline trees until they deteriorate to a point where production is no longer profitable. When this point is reached, the trees are removed and the land treated with nematocides. This has proven to be the most practical and acceptable approach to this problem. It has solid industry support and growers are participating in the barrier work and in the destruction of the groves as they become unprofitable.

Chemical treatments are being applied in 192 separate areas on about 136 miles of barrier. A total of 150 miles of barrier zones will be required to encircle 7,500 acres of citrus plantings known to be infested. The barrier zones are treated with ethylene dibromide at the rate of 25 gallons to the acre every six months. A herbicide is applied in granular form to keep the area free of weeds. Since the beginning of the program trees have been removed and the land treated with nematocides on a total of 1,129 properties with an aggregate of 7,354 acres.



Burrowing Nematode in Citrus  
(Infested tree on right, normal left)



## CEREAL LEAF BEETLE

Cereal leaf beetle, a major pest of grain in Europe, was discovered in the United States for the first time in July 1962. First infestations were picked up in southwestern Michigan and shortly thereafter in adjacent areas of Indiana. By the end of the calendar year, survey revealed the beetle in parts of 4 counties, two in each State. Plant protection officials, both State and Federal, immediately recognized the threat of the destructive pest to other grain-producing areas of the United States. Its potential here had already been demonstrated in the Galien, Michigan, area where tremendous populations had destroyed the small grain crop in some fields.

To minimize spread to other grain areas, Indiana and Michigan placed the infested area under quarantine. The quarantine requires that designated articles and commodities considered as a hazard of spread be suitably treated, handled or processed before being moved from the regulated area. Interim plans with long range objectives, were made for an intensive program of suppression and survey for the 1963 season.

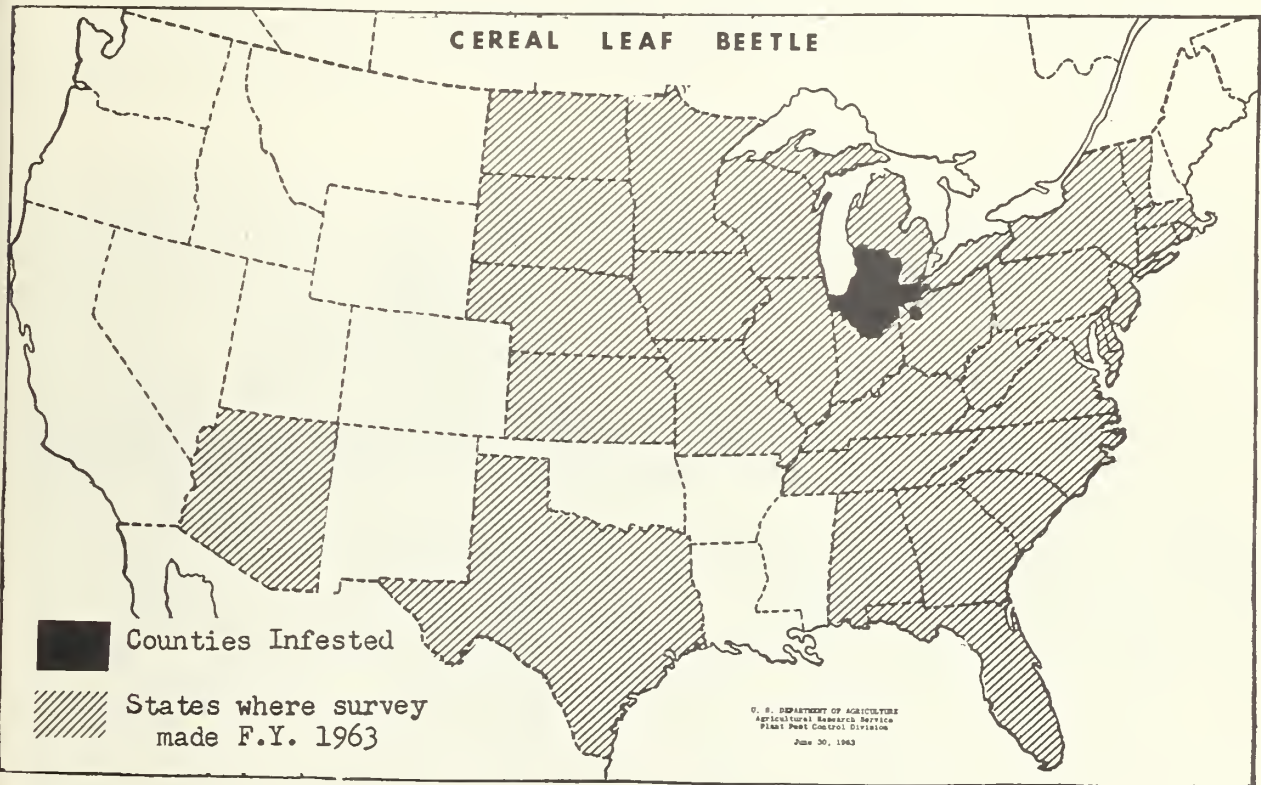
A cooperative suppressive insecticide treatment program was carried out on 36,701 acres of wheat, oats and barley against known infestations in the two States in the spring of 1963. This successfully reduced hazardous population and protected crops in the heavily infested area.



Cereal Leaf Beetle Damage to Oats in Michigan  
(Inset--Adult, greatly enlarged)

In the meantime, intensive survey was revealing additional infested counties, areas to which the beetle had spread prior to its discovery in Michigan. The first infestation was found in Ohio, May 28. By end of July the pest had been found in a total of 46 counties: 25 in Indiana, 15 in Michigan, and 6 in Ohio. As the new areas were discovered, they were placed under regulations by the three States. Cooperative efforts have kept populations of the pest and its injury at noneconomic levels. Preliminary detection surveys conducted in 29 States outside Indiana, Michigan, and Ohio area in fiscal year 1963 indicate that long-distance spread through artificial means may not have occurred.

An additional suppressive campaign on 12,500 acres of corn in selected areas of Indiana and Michigan is planned for July, 1963. The insecticide Sevin will be used in this work. Cooperative research and methods improvement studies on cereal leaf beetle control showed that this material was more effective than malathion--the insecticide used in the spring treatment. Studies are continuing to find more effective ways of dealing with this important pest and the effect of the program on the environment.





## CITRUS BLACKFLY

Control efforts, cooperative with Mexico, have been successful in keeping United States citrus areas free of citrus blackfly infestations. These activities include the use of biological and chemical control to prevent northward spread from areas in Mexico near the United States border and strict enforcement of quarantine regulations.

Over 116,000 trees were inspected on 3,917 properties in the United States in fiscal year 1963 without finding a positive specimen. The last infestation in the United States, a small area in Texas, was eradicated in 1956. Accomplishments in the buffer area of Mexico in fiscal year 1963 added to the effectiveness of the program. The effects of a severe freeze in the winter of 1961 together with an intensive chemical and mechanical control program in 1962 have apparently eliminated the blackfly threat in Nuevo Leon, Mexico, and reestablished an effective barrier zone between infested areas in Mexico and the citrus areas of the United States. More than 1,319,000 host plants were inspected on 30,814 properties and only five properties involving 29 hosts were found infested. These small infestations were in Nuevo Leon. They were treated promptly and no additional blackflies have been found in the State since February 1963.

## EUROPEAN CHAFER

New approaches on survey for the European chafer have proved effective in discovering new areas of infestation. Black light and lure traps, which have been introduced through methods improvement work, are responsible for increased efficiency in this phase of the program.

More than 179,000 acres were found infested for the first time during fiscal year 1963 including 58 in Connecticut, 2,366 in New Jersey, and 176,689 in New York. The first infestation of the pest in Pennsylvania was discovered at Erie in June 1963. Traps were operated in strategic locations in 15 additional States in an effort to detect new infestations.

Treatment was applied to outlying infestations of European chafer on 718 acres in New York and 2,898 acres in New Jersey during fiscal year 1963. All known infestations in New Jersey have been treated. To further insure against spread of the pest to uninfested areas, the regulated area was increased in New York and Connecticut. It is significant that all quarantine restrictions in the Capon Bridge, West Virginia, area were lifted during the year as eradication treatments and subsequent surveys indicate that the State has been freed of the pest.

Until further research on the European chafer provides an alternate means of control or eradication, considerable difficulty can be expected in meeting this problem in many areas due to the high dosage rates of chlorinated hydrocarbons required to suppress the pest.



## GOLDEN NEMATODE

The golden nematode eradication program on Long Island, New York, which provides for the progressive treatment of all known infested land, continued on schedule in fiscal year 1963. Since the beginning of the program on Long Island 15,223 acres have been found infested in Nassau and Suffolk Counties. More than 10,000 of these have been taken over for real estate development leaving approximately 6,000 acres still available for agriculture. Up to July 1, 1962, 1,739 acres had been treated and released for potato production. An additional 778 acres were treated in fiscal year 1963.

During this period surveys on Long Island added 305 more infested acres. At the end of June, the agricultural land known to be infested amounted to about 3,500 acres.

The survey plan for Long Island involves sampling of all potato fields at least once every three years. In addition to the work conducted in New York, surveys were made during the year in 11 other potato-producing States without finding golden nematode.

The Division continued to cooperate with the New York State Department of Agriculture and Markets in the enforcement of State quarantine regulations to prevent spread of the nematode from Long Island.



Soil Fumigation--Golden Nematode Eradication, Long Island

## GRASSHOPPER

Economic grasshopper infestations developed and required control during fiscal year 1963 on 166,993 acres in 10 States. Most of the treated



acreage was in Idaho, Wyoming, and Utah. The cold, wet spring of 1962 was beneficial in reducing grasshopper populations which threatened to build up on rangeland in 15 States. It is significant that in many areas where grasshoppers were controlled in cooperative programs in recent years populations have not yet regained economic levels.

One of the highlights of grasshopper control in 1963 was the progress made in developing alternate methods of treatment. Extensive methods improvement and research tests conducted in California, Idaho, and Montana have shown the effective-

ness of very low volume rates of insecticide. A new formulation of malathion, applied undiluted at a rate as low as eight fluid ounces per acre, resulted in a high mortality of grasshoppers, even in lush range grass areas. Final results of these tests are not yet available, but it seems assured that fairly low rates of several insecticides applied selectively at low volumes will be among the recommendations for future grasshopper control programs. The excellent results with the malathion formulations tested are highly significant as they point the way to means of obtaining effective results without the residue problem that requires special livestock management.

## GYPSY MOTH

Defoliation surveys in the summer of 1962 showed that gypsy moth infestation was building up in several States. There was defoliation of forested areas on about 335,000 acres in New York and five New England States. Damage caused by this pest during the 1962 season was the most severe since 1955. States most severely affected were Connecticut, Massachusetts, and New York. Defoliation occurred also in Maine, New Hampshire, and Vermont.

Insecticide treatment to control the gypsy moth under the cooperative Federal-State program during 1963 was done in New Jersey, New York, and Pennsylvania. All known infestations in New Jersey and Pennsylvania were treated as were peripheral infestations in New York. No treatments were required in Michigan since there were no trap catches in that State in 1962. A total of 135,000 acres was treated in the Federal-State program in 1963; 74,490 in New Jersey, almost 50,000 in New York, and 10,000 in Pennsylvania. DDT was used where forage residues were not a problem, elsewhere Sevin was the chemical used.



In addition to the treatments made under the cooperative Federal-State programs, the New York State Conservation Department treated some 150,000 acres in heavily infested portions of eastern New York and the Massachusetts Department of Natural Resources treated 109,000 acres in Franklin, Hampden, and Hampshire Counties to prevent defoliation. The State of Rhode Island sprayed 835 miles of roadsides to prevent defoliation and more than 10 miles of stone walls around nurseries.

The Methods Improvement Laboratory at Falmouth, Massachusetts, conducted extensive tests with several insecticides in different formulations that showed promise. Gypsy moth parasites shipped from Spain were released in several areas. Irradiated male gypsy moths were also released in test areas. Preliminary tests were made with chemosterilants. New types of baffles for traps were tested in an effort to increase the efficiency of survey procedures. Cooperation also continued with the Entomology Research Division to improve the gyplure formulation so that it can be produced satisfactorily by private laboratories.



Gypsy Moth Defoliation in Connecticut

## HOJA BLANCA

Three specimens of Sogatia orizicola, vector of hoja blanca disease of rice, were collected from rice plantings in Palm Beach County, Florida, June 18, 1963. Subsequently, the disease was found in one location. The infection was discovered in the same general area where it occurred in 1957. This was the first time the disease had been found in the

United States since 1959. Insecticide treatments were started as soon as possible after discovery of the June 18 infestation.



Hoja Blanca Disease in Rice  
(Normal head at left)

Approximately five percent of the rice-growing area is surveyed annually. If either the vector or disease is found, inspection is increased to about 20 percent of the rice acreage around the infested area. In the States of Arkansas, Florida, Louisiana, Mississippi, South Carolina and Texas 221,070 acres were surveyed during fiscal year 1963.

Hoja blanca was found on three farms in Palm Beach County, Florida, in 1957 and a small infestation was located in Hancock County, Mississippi, in 1958. In 1959 the disease was found in 11 Louisiana parishes and the vector in three additional parishes. No further finds were made until the summer of 1962, when the vector was recorded in seven Louisiana parishes on 34 properties, with 5,335 acres involved. A total of 14,741 acres was treated to eradicate the vector in this outbreak.

## IMPORTED FIRE ANT

More than 1.5 million acres were treated with mirex bait for imported fire ant eradication during fiscal year 1963. The bait has proved highly effective against the fire ant while involving no residue problem with livestock, fish, wildlife or other values. Only one-seventh ounce of the toxicant mirex is applied to the acre. The Federal Pest Control Review Board on May 10, 1963, informed the Secretary of Agriculture that it had approved continuing the imported fire ant program and was highly complimentary of the successful effort to develop an effective bait as a replacement for heptachlor under most circumstances.

An additional one-third million acres in specialized areas were treated with heptachlor during the year. This brought the total acreage treated since beginning of the program up to 5,363,463 acres.



Methods improvement work has continued undiminished in an effort to improve the formulation of the bait so that its effectiveness in the field will be prolonged. Special emphasis has been given to aerial application phases of the program in an effort to reduce costs and increase productivity of application.

The cooperative imported fire ant program has prevented long-distance artificial spread; it has eliminated important outlying infestations; and it has protected both rural and urban areas from the damage and annoyance of this pest.



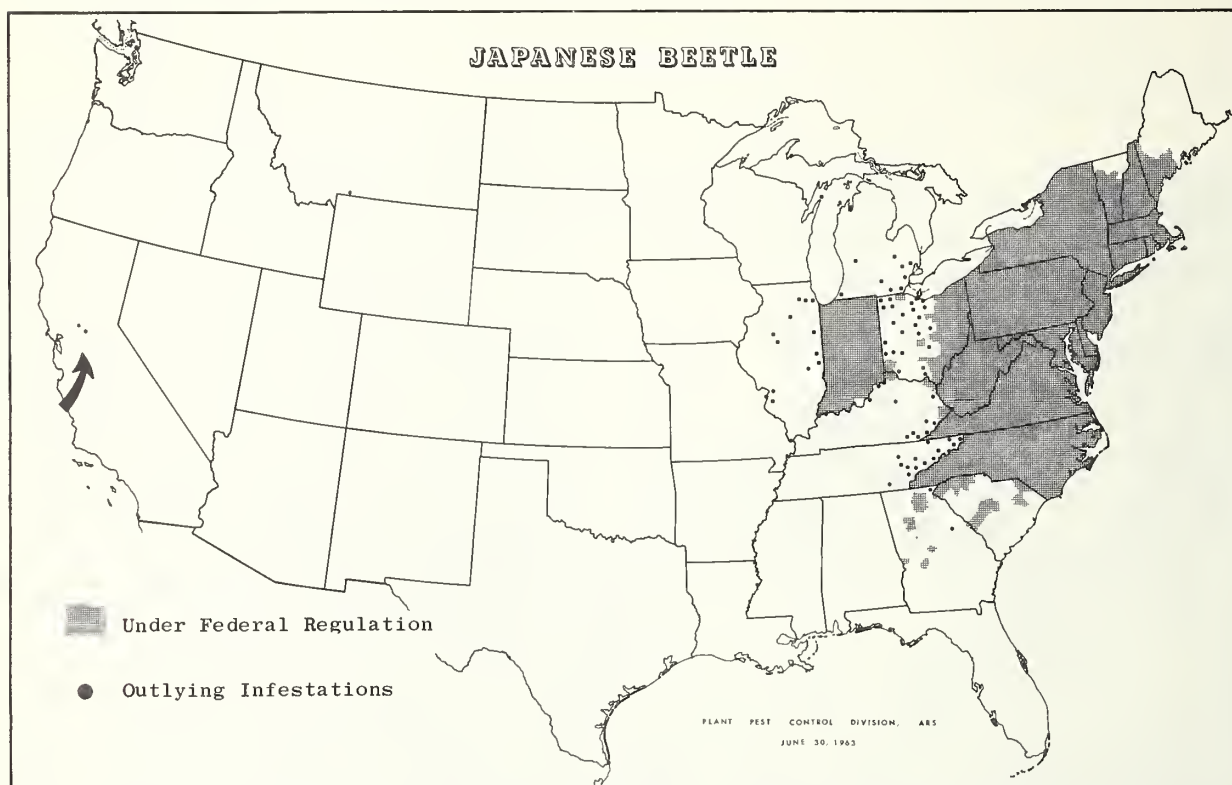
Imported Fire Ants Killed by Mirex Bait

#### JAPANESE BEETLE

The program to eradicate the Japanese beetle outbreak in the Sacramento area of California reached a highly encouraging level during fiscal year 1963. No specimens of the pest have been collected in the area since July 18, 1962. In the cooperative State-Federal program in California 14,511 acres have been treated since the beetle was first found there in June 1961.

To improve the effectiveness of the containment program against Japanese beetle, four new States (Georgia, Indiana, Kentucky, and South Carolina) were placed under Federal quarantine in September 1962. At the same time, States having isolated outlying infestations, undertook a vigorous program to eliminate all known infestations within their borders. This effort resulted in the treatment of 85,600 acres in Michigan, 5,470 in Illinois, 14,421 in Tennessee and 3,013 in Missouri during the year.

Regulatory accomplishments for the year show that 3,345,883 lots of plant material and commodities and 42,000 acres at airports and shipping points were treated to suppress hazard of spread. A total of 87,000 acres of civil and military airport turfed areas have received insecticidal treatments to destroy beetle larvae and other soil insects.



To locate infestations outside the generally infested area, nearly 60,000 traps were operated in 36 States during the 1962 beetle flight season. Findings from this survey were the basis for the eradication treatments in peripheral areas mentioned earlier. No new long-distance spread of the pest was discovered in fiscal 1963.



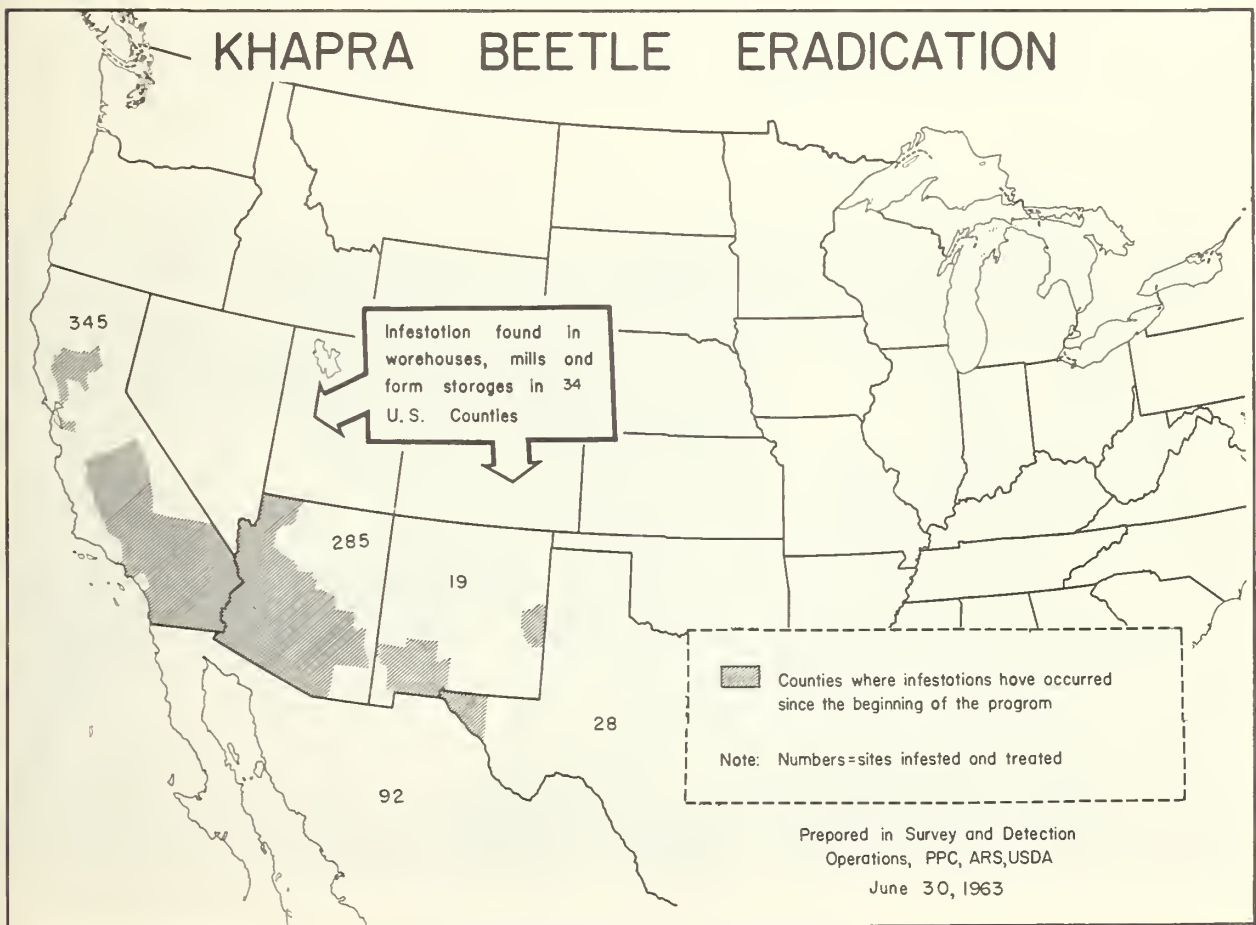
Japanese Beetle Feeding on Soybeans

## KHAPRA BEETLE

The possibility of eliminating this destructive grain pest from the United States appears more and more promising. During fiscal year 1963, 31,057 properties were inspected in Arizona, California, New Mexico, Texas, and the Republic of Mexico, with only 17 found to be infested. All of the infested properties were in Arizona and all were traced to a single infested feed mill. These infestations have been treated.

Detection surveys for khapra beetle were conducted during fiscal year 1963 on 33,799 properties in 37 States in the United States and seven States in Mexico. The importance of this vigilant detection effort is pointed up by the fact that khapra beetle was intercepted 225 times during this interval at U.S. ports of entry.

No khapra beetle has been found in New Mexico since May 1959, in Texas since April 1960, and in Mexico since 1961. The last infestation discovered in California was in January 1962; the last in Arizona, July 1962. Since the beginning of the eradication program, 769 storage facilities involving 204.3 million cubic feet have been fumigated. This treatment total includes initial and repeat fumigations.





## MEDITERRANEAN FRUIT FLY

Prompt detection of incipient infestations of the Mediterranean fruit fly is the key to keeping this pest from becoming established in the United States. To accomplish this the State and Federal agencies have established a continuing trapping program for the State of Florida, the citrus producing Gulf States, and Arizona. To intercept possible spread of this pest from Central America to Mexico where it would become an immediate threat to the United States, a trapping program is conducted along the Mexico-Guatemala border.

The Mediterranean fruit fly was discovered in the Miami area of Florida in June of 1962, and subsequently was found established in parts of Dade, Broward, and Palm Beach Counties. An eradication program was initiated immediately and by April of 1963 the work was considered successful and the program terminated. This infestation involved a pattern of about 85,000 acres, and an aggregate 722,000 acres required treatment to accomplish eradication.

A second outbreak was discovered in June of 1963 close by the Miami International Airport. Prompt action was taken again to eradicate this incipient infestation, which involves a much smaller area than the 1962 infestation.

It is not known at this time how Mediterranean fruit fly is coming into this country, although there is ample opportunity in the Miami area for entry through boat and aircraft traffic. Because of the likelihood of future introductions, State and Federal agencies will maintain the detection trapping program in the Miami area at a high level.



Lure Traps Pave Way for  
Medfly Eradication in Florida



## MEXICAN FRUIT FLY

There is no established infestation of Mexican fruit fly in the United States. Each year this pest of citrus migrates from Mexico into the citrus producing areas of Texas. Detection traps reveal the infestation when it occurs and signals the time when the fruit moving out of the area to other citrus producing States is placed under quarantine regulations.

Mexican fruit fly builds up each year in the Baja California area of Mexico through spread from established infestations in States to the south. This infestation poses a threat to California fruit and vegetable crops. Consequently, as infestations are detected, insecticide treatments are applied. As a precaution, susceptible host plants on the California side of the border are treated two or more times during the season to prevent establishment of the pest. On the California side of the border, approximately 15,000 acres with some 230,000 susceptible host plants were given protective insecticide treatments during the fiscal year.

The detection and insecticidal treatment work on the Mexican side of the border has been effective in keeping the fruit fly out of California. Although flies are trapped in the Tijuana area every year, it is unusual for them to be picked up on the American side of the border. One fly was trapped at San Ysidro, California, on July 1, 1963, but this was the first catch in California since 1957.

## MORMON CRICKET

The Mormon cricket control program is planned in a way to locate and treat infestations before there is buildup and migration begins. This plan of operations has been successful in preventing populations of destructive numbers such as occurred in the late thirties when over 19 million acres were overrun in a single year in 11 States. Cricket infested areas are kept under close surveillance each year and when there is evidence of population buildup insecticide baits are applied to the infested area.

Work on this program has successfully progressed to the point where the pest is being confined mostly to breeding grounds. Only small isolated areas in Nevada, Wyoming, and Utah amounting to 2,300 acres required treatment in fiscal year 1963.

## PHONY PEACH AND PEACH MOSAIC

The low level of phony peach infection continued in fiscal year 1963 with an incidence of 0.22 percent. Of the 6,577,622 peach trees inspected only 14,169 infected trees were found. In 1962, the infection rate was 0.28 percent. The continuing decline of infection is attributed to the effectiveness of infected tree removal, the destruction of wild plum, a carrier of the disease, together with the control of the disease vector with chemicals used in the regular orchard spray schedules.

The peach mosaic infection rate had declined in 1962 to 0.03 percent from a high of 4.16 percent in 1935. During the year, 3,981,200 trees were inspected and 415 were found infected, an infection rate of only 0.01 percent. The number of infected trees, 415, is about one-third the number found last year. The exact cause of this very low incidence is not known at the present time. It is believed, however, that the greatly lowered incidence, particularly as demonstrated in California and Colorado, is due to several factors: (1) delay of inspection until later in the season which assures locating all of the trees evidencing symptoms of mosaic, (2) prompt removal of infected trees, (3) removal of tolerant varieties which have served to mask the infection, and (4) discontinuance of infected twig clipping by growers in advance of the inspection crews.

## PINK BOLLWORM

Results of eradication efforts in the Arkansas-Louisiana area continued to be effective during the year ending June 30, 1963. Only two specimens of pink bollworm larvae were recovered in each State during the 1962 season. The negative surveys in much of this area made possible, on January 29, 1963, the lifting of quarantine regulations in 28 counties in Arkansas leaving all or parts of eight counties regulated and seven parishes in Louisiana leaving six parishes regulated.

The incipient infestation found in Arizona in 1959 required the treatment of 75,000 acres that year. By 1962, the acreage requiring insecticide applications had decreased to 1,200 acres. Inspection during the 1962 cotton crop season throughout central Arizona revealed only one larva. Only 223 acres required treatment in 1963 as a result of this find.

The recently discovered pink bollworm lure was used experimentally in the Arizona survey during the 1963 season. This new survey method offers much promise in improving surveys to detect the pest and to delimit known isolated infestations.

Several outbreaks of pink bollworm developed in 1963 in Texas in areas of Matagorda, Calhoun and Pecos Counties. Bloom infestation reached as high as 95 percent in Matagorda County in May, and larval populations as high as 2,650 per acre in Pecos County in June. Losses will be severe in many fields.

## SOYBEAN CYST NEMATODE

In 1963 soybean cyst nematode surveys were conducted in 22 of the major soybean-producing States. New infestations amounting to 16,149 acres were found in the eight previously known infested States.

As of June 30, 1963, 87,104 acres were known to be infested in these States based on soil survey. Survey personnel estimate the total infestations pattern at about 350,000 acres.

Soybean cyst nematode damage was noted in Arkansas, Illinois, Missouri, North Carolina, and Tennessee during the 1962 growing season. Stands were reduced in many fields and some fields were total losses.

The Division is cooperating with the Crops Research Division, Agricultural Research Service, and the Experiment Stations in Arkansas, North Carolina, and Tennessee in a further evaluation of NC55, a resistant black-seeded soybean. The bean has been planted on heavily infested plots to evaluate resistance and to determine the extent of reduction of the nematode population. The objective of these studies is to see how this resistant seed does in heavily infested fields under different environmental conditions.

The development of a yellow-seeded soybean resistant to the soybean cyst nematode was announced by the University of Missouri field crops department, May 30, 1963. This selection will now be used in the breeding program in an effort to develop a commercially acceptable resistant variety.



Soybean Cyst Nematode Damage in Missouri



## SURVEY AND DETECTION

The importance of the early detection of new insect pests was further emphasized in fiscal year 1963 when surveys revealed that the cereal leaf beetle, first discovered in July of 1962, had spread over additional counties in the States of Indiana and Michigan. The pest was also found for the first time in Ohio. Continuous trapping for the Mediterranean fruit fly in Florida revealed an incipient infestation on June 17 near the international airport in the city of Miami. The discovery was made in time to permit the prompt application of eradication treatments. Three insect species were reported for the first time in the United States in fiscal year 1963. None of them appear to be of economic importance although very little is known about two of the whiteflies, Dialeurodes kirkaldyi, first found in Key West, Florida, late in the fall of 1962; and Aleurotrachelus jelinekii found in California in the spring of 1963.

The rice delphacid, vector of hoja blanca disease of rice, was found in Florida in June for the first time since 1957, as the result of continuing detection surveys. Two specimens of Mexican fruit fly were trapped in backyard citrus trees in Nogales, Arizona, pointing up the fact that the threat from this important citrus pest is ever present. The European chafer was collected for the first time in Pennsylvania in June. The cooperative detection work also showed new distribution records for several important pests already established in the country.

Cooperatively financed survey entomologists are employed in 25 States. Three States--Indiana, Michigan, and Ohio--came into the program this year. The Cooperative Economic Insect Report, wherein the nationwide reports are published, continues to be in demand and now reaches approximately 4,100 individuals each week.

## SWEETPOTATO WEEVIL

A severe freeze in the winters of 1962 and 1963 drastically reduced overwintering populations of sweetpotato weevil in the field. With field populations reduced to a low level there was an opportunity to effect a high degree of control of this pest by concentrating on a survey and clean-up of commercial and farm storages. Recognizing this, Federal and State agencies, utilizing additional funds, have pushed this phase of the program in the past two years.

A general property by property survey has been made with special emphasis on home garden plantings and inside storages or other sites where the weevil might have escaped the weather. Such a comprehensive survey had not been possible under the normal weevil program.

The expanded inspection activity revealed a substantial increase in number of infested properties in counties known to be infested. Infestations were also found in a few bordering counties where it was believed that eradication had been accomplished. Cleanup programs were initiated immediately wherever infestations were found. This work was greatly assisted, especially in urban areas, by arrangement for nonplanting zones and a broad educational program to promote public understanding of the overall sweetpotato weevil control program.

Results of the program have been encouraging. By the end of fiscal year 1963, the northern boundary of the infestation had been established, the true extent of the problem determined and the pest eradicated in many areas. All infestations of the weevil have been eradicated from a commercial production area near Jackson, Mississippi, and 400 of the original 500 infestations in the commercial area of southern Georgia have been eliminated. During the past two years infestations have been eliminated from East Feliciana and West Feliciana Parishes in Louisiana. This area includes the St. Francisville section where the largest sweetpotato market in the State is located. Only 39 infestations remain in Alabama--none in commercial areas--and a substantial buffer zone has been established between the commercial sweetpotatoes grown in northeast Texas and the generally infested area to the south. Sweetpotato weevil populations have been substantially reduced in the remainder of the infested area.

#### WHITE-FRINGED BEETLE

At the close of fiscal year 1963, all known infestations had been soil-treated in Kentucky and Virginia. In Arkansas, however, the treatment has not kept pace with newly infested acreage. There are now six known infested counties in the northeastern section of the State.



White-fringed Beetle Damage to Corn in Alabama



Throughout the Southeastern States during fiscal year 1963, 60,163 acres were soil-treated and more than 70,750 lots of nursery stock and other commodities were treated for regulatory purposes. A total of 9,718 acres of nurseries was soil-treated, and 1,104 acres were foliage-treated for regulatory purposes. In addition, 5,286 properties were inspected to permit orderly marketing of farm products.

The white-fringed beetle quarantine has been revised to provide for dividing the regulated area into a suppressive and a generally infested area. This action will protect the eradication areas from becoming reinfested. The revision also requires the certification of used harvesting machinery and construction and maintenance equipment.

New white-fringed beetle infestations were found on 137,030 acres during the year and a general increase in populations was reported from several infested States. Containment of these outbreaks will be difficult under present restrictions on usage of chlorinated hydrocarbon insecticides. Efforts are being stepped-up to find alternate methods of control.

#### WITCHWEED

Progress in witchweed eradication in the Carolinas was demonstrated in fiscal year 1963 by the almost complete elimination of crop damage, the marked reduction in the infestation and the prevention of spread to uninfested areas. The infestation pattern appears to be stabilized since it has changed very little after five years of survey and much of the increase in acreage was in the center of the known infested area. Only one new county was found infested during the year.



Herbicide Application--Witchweed Eradication in the Carolinas

Effective State and Federal quarantine regulations have greatly reduced the hazard of long-distance spread of the pest. Keeping the infested fields under herbicide treatments has helped to prevent local spread. Surveys conducted in 22 States showed the pest to be still confined in its original area of infestation in North Carolina and South Carolina. During the year, eradication treatments were applied on an aggregate 458,983 acres.

The 1963 control program to treat all witchweed infested land that is idle or planted to corn and other 2,4-D tolerant host crops was started late in June. All infested land will be either in "trap crops" or treated with herbicides.

Research and methods improvement scientists are continuing their search for better control and regulatory treatments. Tests include post emergence herbicides as substitutes for 2,4-D, preplanting, and pre-emergence herbicides that can be used on corn, cotton, tobacco, and soybeans, systemics for use in corn and soil fumigation to destroy seed. Work is continuing on studies to isolate the stimulant in host crops that triggers witchweed seed germination.

#### SPECIAL SURVEYS

Special surveys are conducted annually for boll weevil, beet leafhopper, potato psyllid, and other pests as they occur, to inform and guide affected growers and industry.

Four surveys were made in Nebraska for potato psyllid during May and June. Finds ranged from 10 to 58 per 100 sweeps on Lycium. The July 1962, survey revealed populations of such density that the Scotts Bluff Experiment Station Entomologist recommended control. Although potato psyllid populations in Texas were higher at all locations in 1963, they did not appear to be present in alarming numbers.

Fifteen southwestern Kansas counties were surveyed for the beet leafhopper in April. Specimens were found at only 3 of 36 stops. This was the first time beet leafhoppers were found in Kansas on the annual survey, light infestations being reported from Stevens, Morton and Grant Counties. Surveys in beet leafhopper areas in southern Idaho revealed low populations; no control program was necessary. A special survey in the beet-growing areas around Worland, Wyoming, was also conducted. The Beet Growers Association, with financial assistance from Wyoming Department of Agriculture, and technical assistance from PPC, treated 3,670 acres with malathion. The beet leafhopper survey in West Texas, completed March 20, 1963, revealed a population about 100 percent higher than in 1962.

Boll weevil hibernation surveys in the fall of 1962 showed lower numbers than usual in most areas sampled in Louisiana, Mississippi and Texas, and populations about the same as in 1961 in North Carolina and South Carolina. Follow-up 1963 spring survival surveys conducted in the same areas sampled in the fall revealed that a relatively low percentage of weevils in hibernation had survived the winter. Percent survival in the Carolinas ran from 12 to 50 percent of that for the



previous year. The average for Mississippi was 0.2 percent compared with 13.59 in 1962. Survival in northeast Louisiana was 3.0 percent. In only two winters in 27 years, had survival been lower in this area. Surveys in Texas showed that 25.4 percent of weevils going into hibernation had come through the winter, compared with 33.1 percent in the spring of 1962.

The whitefly, Dialeurodes kirkaldyi, was found in Florida in the fall of 1962. This was the first record of this insect in the United States. Surveys for the pest were undertaken following notification of its presence in the State. This work showed the whitefly to be widely distributed in Florida from Key West into Broward County.

#### FOREIGN TECHNICAL ASSISTANCE PROGRAM

Regional Insect Control Project activities in the African area continued to expand during the year. This expansion was aimed chiefly toward the development of closer, more active international cooperation in locust control in East Africa and the establishment of a basic training unit for pilots in the Sudan.

During the latter half of 1962, some 70,000 acres of locusts sprayed in Ethiopia played an important role in reducing locust infestations to their lowest level since 1948. Cooperation with the Desert Locust Control Organization for East Africa has since resulted in the most intensified survey effort ever undertaken by aircraft in the area. Regional Insect Control Project planes spent approximately 1,700 flying hours on aerial reconnaissance up until June 30.

Appraisal surveys of the plant protection organizations of the Governments of Syria and Morocco were made during the year. Project work in the latter country terminated in February 1963.

Increased attention was given toward developing plant protection organizations through better staffing and training of local nationals. At the close of the fiscal year the project was operating full-time in seven countries of the Near East and Africa with a total of 17 entomologists and pilots in service.

Publication of a handbook on the economically important agricultural pests of northeast Africa and southwest Asia, expected sometime next year, will contain pertinent information of value to all plant protection personnel.











Report on Cooperative Plant Pest Control Eradication  
Programs of Interest to the Plant Boards

There have been several developments in cooperative pest control programs that should be highlighted in this report before presenting the current status of the various programs. During the past year the Mediterranean fruit fly was eradicated for the fourth time in Florida. Following 90 days of fly-free conditions in the infested area, Federal and State regulations were lifted on November 26, 1963. Intensive surveys will be continued to detect any new introduction before the pest has an opportunity to spread and become established in large areas in Florida and other citrus-producing States.

The Japanese beetle situation in California continues to be most encouraging. During the year despite intensive surveys the beetle was not found in any of the previously infested areas in California.

On December 3, 1963, the last premise still under the khapra beetle quarantine was removed from the list of regulated properties which has been maintained since this beetle was discovered in California in 1953. Even though the khapra beetle appears to have been eradicated, intensive surveys will be continued to locate any new or introduced infestation that may occur in the United States or Mexico.

A new formulation of mirex bait at a reduced application rate provides initial control equal to the original formulation. The volume of bait has been reduced from 10 pounds per acre to 2 1/2 pounds. The savings resulting from this change make it possible to treat larger numbers of acres to offset in part some of the difficulties we are encountering with reinfestation.

During the past year Division Methods Improvement personnel, working with representatives of the Entomology Research Division, made significant advances in aerial application techniques. Early last spring following some leads developed by preliminary work the previous year, trials were established to reduce the volume of various formulations of insecticides. For many years, one gallon of mixed insecticide was accepted as the standard rate for aerial application. The first trials reduced the standard rate of application by one-half. Results from the trial applications revealed the results to be better or equal to standard application rate. Using this information as a guide to further tests, dosage rates were successfully reduced to one quart per acre and later to one pint per acre with equally good results. New formulations of malathion became available during the course of these trials which made further reductions possible. Successful field trials were completed with malathion at one-half pint per acre against rangeland grasshoppers. Recommendations for 1964 will be a modification of the low dosage rate. The Division is now recommending and plans to use one or one and one-half pints of a mixed malathion formulation containing 8 to 12 ounces of insecticide on much of the rangeland to be treated in 1964. More work remains to be done before the new techniques developed on the grasshopper program are recommended for other programs.

Various boards and study groups will continue to review cooperative pest control programs during the next year. The emphasis will remain on the use of persistent chemicals for large-scale control and eradication efforts. In line with these reviews and studies the Division plans to continue making practical adjustments in its programs to implement the recommendations made by the Science Advisory Committee in its report to President Kennedy on the use of pesticides.

The Division now has an active program underway to evaluate pest control programs with special reference to the environmental impact associated with control and eradication procedures. Funds have been provided to install a small technical staff to direct a monitoring program which will assure adherence to safety procedures designed to protect public health, the operators applying insecticides and nontarget organisms in or near the areas to be treated. Special studies, which would involve detailed surveys of insects and vertebrates, or collecting samples to determine residues, will be arranged for under contract. When such special studies become necessary we are hopeful that universities, conservation agencies, and others equipped to do this work will be interested and will undertake these studies under our direction.

#### Barberry Eradication

The cooperative program to remove susceptible barberry plants throughout 19 Northern States continues to make good progress. There are now approximately 37,000 square miles remaining in the States which will need one or more inspections to assure eradication. The most active programs are in Illinois, Iowa, Kansas, Michigan, Missouri, Ohio, Pennsylvania, Virginia, and Washington. During the year nearly 7 million rust-susceptible barberry bushes were destroyed on more than 2,800 properties in 17 States.

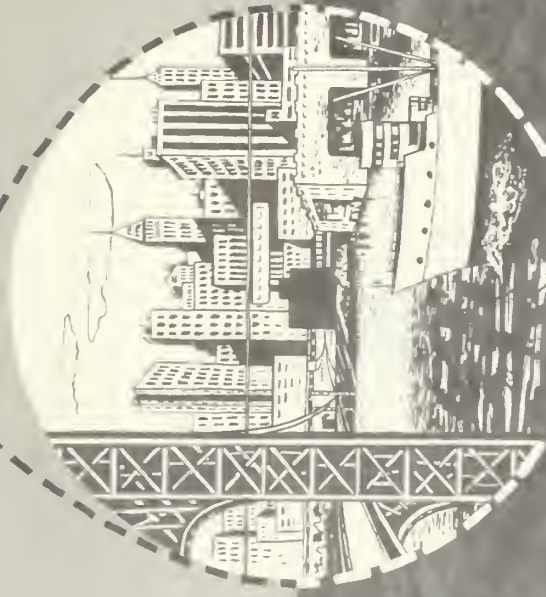
The barberry eradication program includes the enforcement of Federal quarantine No. 38. This requires the annual inspection of nurseries and dealer establishments to make sure rust-susceptible barberries are not sold within or shipped into the eradication States. During the year more than 600 nurseries and dealers were inspected and qualified for certificates which permit the growing and sale of nonsusceptible barberry stock.

#### Boll Weevil

A strain of the boll weevil which appears to be adapted to the hot, arid climate in the irrigated regions of the West has been a serious limiting factor in cotton production in the Presidio Valley of Texas since 1953. Surveys conducted along the Rio Grande indicated that this weevil was migrating up the river from Presidio and northward from infested areas in Mexico toward New Mexico and Arizona. If this weevil were to become established in New Mexico and Arizona, cotton areas in these States as well as in California would be seriously threatened.



**AN OUNCE OF PREVENTION**



**BETTER THAN MILLIONS FOR CURE**

U.S. DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE





# INFESTED AREA



EMERGENCY CONTROL  
AND REGULATORY  
PROGRAMS UNDERWAY





Since 1961 the Plant Pest Control Division has cooperated with the Entomology Research Division, the National Cotton Council, the State of Texas, and the Republic of Mexico in conducting experimental treatments of cotton along a 125-mile strip bordering the Rio Grande River in Mexico and Texas between Ruidosa and Fort Quitman to halt the continued migration of the boll weevil up the river toward New Mexico. In 1962 the program was expanded to include a small area in the El Paso Valley where a small infestation was discovered and approximately 2,600 acres in northern Sonora, Mexico, where a boll weevil infestation threatens cotton grown near Nogales, Arizona.

The results of this program have shown substantial reductions in the number of boll weevils in the areas being treated. Surveys conducted in the fall of 1963 have shown that the migrations were halted at the Moody Bennet Farm about half way up the river in the eradication area toward El Paso. This has demonstrated that fall migrations can be stopped.

In Arizona extensive infestations of a weevil believed to be the *thurberia* weevil infested many cotton fields in southern Arizona late in the 1963 season. Cotton growers are quite concerned and have expressed their fears that this may be an extension from Mexico of the western strain of the cotton boll weevil. Arrangements have been made to study these weevil infestations further and steps have been taken to obtain the positive identification of the weevil concerned. A similar infestation occurred in Arizona in 1959 when weather conditions favored the late season emergence of the *thurberia* weevil.

#### Burrowing Nematode

The control program for the burrowing nematode was modified in September 1961 and a barrier or buffer zone procedure was instituted. Under this program, chemical barriers are established around infestations to prevent spread through roots. This permits grove owners to continue to harvest citrus from the decline trees until they deteriorate to a point where production is no longer profitable. When this point is reached, the trees are removed and the land fumigated. This has proven to be the most sensible and acceptable approach to this problem. It has solid industry support and growers are participating in the barrier work and in the destruction of the groves as they become unprofitable.

Chemical treatments are being applied in 192 separate areas on 136 miles of barrier. A total of 150 miles of barrier zones will be required to encircle 7,500 acres of citrus plantings known to be infested. The barrier zones are treated with ethylene dibromide at the rate of 25 gallons to the acre every six months. A herbicide is applied in granular form to keep the area free of weeds. Since the beginning of the program trees have been removed and the land treated with nematocides on a total of 1,157 properties with an aggregate of over 7,000 acres.



## Cereal Leaf Beetle

The cereal leaf beetle, Oulema melanopa, was first discovered in the United States in southwestern Michigan in July 1962 and shortly thereafter in adjacent Indiana. By the end of 1962, infestations were known in two counties in Indiana and two in Michigan. Since this beetle is recognized as especially destructive to cereal crops, the infested area was placed under quarantine by the two States concerned.

The spring and summer survey of 1963 revealed additional infested counties in both Indiana and Michigan and on May 28 the beetle was found for the first time in Ohio in Williams County. Ohio promptly promulgated a quarantine and by midsummer the three infested States had all or parts of 48 counties under uniform regulations: 25 in Indiana, 17 in Michigan, and 6 in Ohio. Treatment is required for designated articles to be moved from the regulated area. Grain must be treated with malathion or by other approved treatments, hay and straw fumigated, sweetcorn treated with Sevin, and forage crop seed recleaned. Other commodities considered as a hazard of spread of the insect must be suitably treated, handled, or processed.

To suppress populations and to minimize spread, a joint Federal-State control program was initiated early in the spring. Control consisted of the spraying of 36,700 acres of wheat, oats, and barley with malathion. Twelve thousand five hundred acres of corn were treated with Sevin in July. It is proposed to continue intensive surveys to determine any further spread of the beetle. The results obtained by research studies now underway will assist in determining future control operations.

## Citrus Blackfly

The citrus blackfly, a native of Asia, was first found in the United States in 1934 in the State of Florida where it was subsequently eradicated. In 1955 and 1956, it was found in Brownsville, Texas. All infestations in the United States have been eradicated, and inspections have continued to be negative for the past seven years.

The Division assists the States and joins with the Republic of Mexico in surveys and in control of the insect. Mexican citrus-producing areas bordering Arizona, California, and Texas citrus areas are kept free of citrus blackfly through chemical control. South of the free areas, citrus blackfly populations are kept at a low level through biological control. The free areas are subject to occasionally recurring infestations. Through survey these infestations are found and eradicated by treating infested groves and the trees in a protective area around them.

In 1961, in the free area in the State of Nuevo Leon, Mexico, extensive reinfestation occurred. A disastrous freeze, which caused widespread destruction to citrus foliage and to some trees, occurred on January 10, 11, and 12, 1962, but did not accomplish complete elimination of the blackfly.



Where the freeze was not too severe, spraying was resumed. The combined results were very effective. No blackflies were observed in Nuevo Leon from March 1962 until a few small infestations were found at Allende and Linares in January and February 1963. These were sprayed immediately, and it appears the infestation has been eradicated in that State.

During fiscal year 1963, 1,319,000 host trees and plants were examined on 30,814 properties in Mexico, with 5 properties having 29 infested hosts. No infestations were found in the United States, where 116,000 host plants were examined.

#### European Chafer

The use of black light and lure traps developed under the methods improvement program provides more effective survey operations and has increased efficiency in discovering new areas of infestation. The first infestation of the pest in Pennsylvania was discovered at Erie in June 1963. In addition, more than 179,000 additional acres were found infested for the first time -- 58 in Connecticut; 2,366 in New Jersey; and 176,689 in New York. Traps were operated in strategic locations in 15 additional States in an effort to detect promptly any new infestations.

All known areas infested with the European chafer in New Jersey and Pennsylvania were treated with the soil insecticide dieldrin at 3 pounds to the acre. In New York treatment has been limited to isolated infestations and transportation sites where a hazard of spread exists. The areas under regulation in Connecticut and New York were expanded to bring all of the known infested areas under regulation. There have been no recurrences of the infestation at Capon Bridge, West Virginia.

#### Golden Nematode

The golden nematode eradication program on Long Island, New York, provides for the progressive treatment of all known infested agricultural land. During the past year, 489 acres were fumigated to bring the total to 3,321 acres. This is about one-half the total acreage scheduled for treatment.

The survey schedule for Long Island calls for sampling of all potato fields at least once every three years. In addition to the work conducted in New York, limited surveys are conducted periodically in potato-producing areas of other States. To date the infested area has been confined to two counties on Long Island.

Recurrence of the nematode in treated fields has been slight. Viable cysts have been found on a small acreage in a few fields treated in 1960 and 1961. These fields are retreated as infestation is revealed.

## Grasshoppers and Mormon Crickets

At the beginning of the 1963 season grasshopper populations throughout the Western States were at a low level. As the season progressed and dry weather persisted severe infestations developed in local areas on rangeland throughout the Rocky Mountain area. It became necessary to treat 498,147 acres in 8 States.

Extensive methods improvement and research tests conducted in California, Idaho, and Montana have shown the effectiveness of very low volume rates of several chemicals other than those previously used. A new formulation of malathion, applied undiluted at a rate as low as eight fluid ounces per acre, resulted in a high mortality of grasshoppers, even in lush range grass areas. Results of these tests have made it possible to recommend low volume application rates using malathion at 8 to 12 ounces per acre on rangeland in 1964.

The excellent results with the malathion formulations tested are highly significant in that they point the way to the means of obtaining effective results without creating a residue problem that would require drastic changes in livestock management.

In conjunction with the California grasshopper tests conducted in the vicinity of a reservoir serving as a water supply for two municipalities, the State Department of Public Health was invited to make pretreatment and post-treatment analyses of the water. In Idaho and Montana game management agencies were invited to make whatever inspections they considered advisable. Results of these observations were negative for contamination or significant mortality of fish and game.

Mormon cricket infestations have been limited mostly to small isolated areas in the past few years. Baiting of these small areas has helped to reduce migration; only 1,500 acres required baiting in 1963. This was in Utah. Careful surveillance of crickets has continued in order to detect any banding and migration. By treating small bands of Mormon crickets as they develop, annual baiting programs have been kept to a minimum and losses due to crickets, therefore, have been almost negligible in recent years.

## Gypsy Moth

The 1963 aerial defoliation survey showed a continued buildup of gypsy moth infestations and defoliation damage in New York and five New England States. Damage to forest areas was especially severe in northwestern and central Connecticut, the Quabbin Reservoir area of Massachusetts, the southwestern corner of New Hampshire and an area west of Equinox Mountain in Vermont. Defoliation also occurred in New York and Maine.

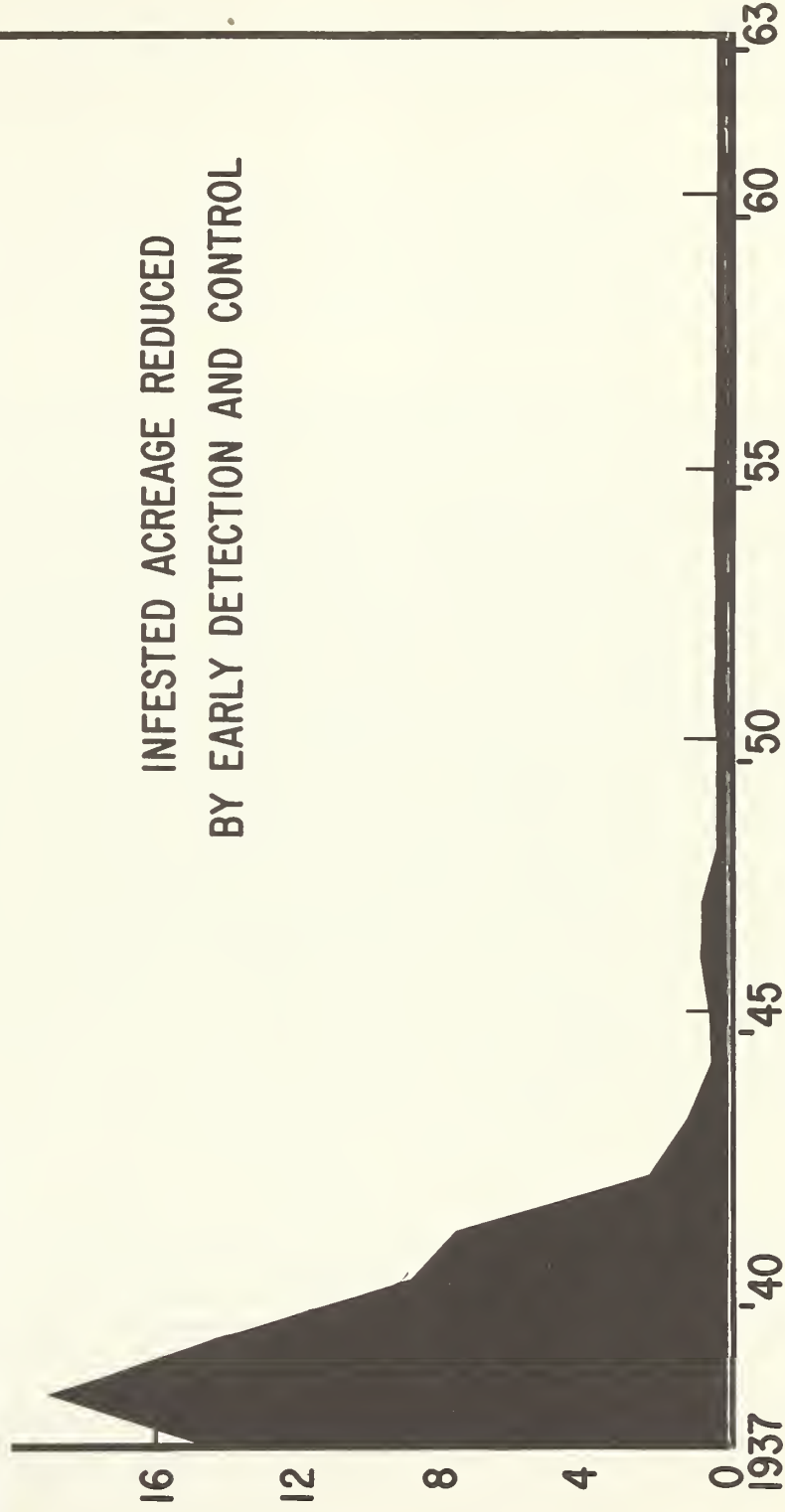
Treatment of gypsy moth under the cooperative Federal-State program during the 1963 season included work in New Jersey, New York, and Pennsylvania. All known infestations in New Jersey and Pennsylvania were treated as were



MORMON CRICKET

# CHEMICAL CONTROL CAUSES DECLINE

MIL. ACRES INFESTED







peripheral infestations in New York. No treatments were required in Michigan since there were no trap catches in that State in 1962. The total acres treated in the Federal-State program in 1963 amounted to about 135,000; 74,000 of which were in New Jersey; 50,000 in New York, and 10,000 in Pennsylvania. DDT was used where forage residues were not a problem, elsewhere Sevin was the material used.

In addition to the treatments made in the Federal-State programs, the New York State Conservation Department treated some 150,000 acres in heavily infested portions of eastern New York. The Massachusetts Department of Natural Resources treated 109,000 acres in Franklin, Hampden, and Hampshire Counties; and the State of Rhode Island sprayed 835 miles of roadsides to prevent defoliation.

The methods improvement laboratory at Falmouth, Massachusetts, conducted extensive laboratory and field tests with promising chemicals in an effort to find a satisfactory substitute for DDT and Sevin. In this connection, studies were carried out in cooperation with New York and Pennsylvania State agencies to determine methods of protecting honeybees during the application of Sevin sprays. Division Methods Improvement personnel again cooperated with the U. S. Forest Service and the State of New York in large-scale aerial field tests with Bacillus thuringiensis. Results were discouraging and it appears that a considerable amount of work needs to be done in the laboratory to improve current formulations of B. thuringiensis. Another microbial agent, the gypsy moth polyhedral virus, will be field tested at high dosages and in possible combination with various stress agents. In cooperation with research agencies, preliminary laboratory and field tests involving the sterile-male release technique were initiated. Sterility was achieved by means of gamma radiation and by the use of chemicals. Through the provisions of the PL 480 program, two gypsy moth parasite species were introduced into southern Connecticut from Spain. In addition, several species of native parasites were mass-reared and released in infested areas of New Jersey. Gyplure, the synthetic female sex attractant, is being utilized in tests aimed at male annihilation through various means including saturation trapping. Plans are underway for another attempt to confuse male moths during the flight season by applying gyplure in the various formulations in infested areas by aircraft. The Pesticide Chemicals Research Branch is producing gyplure in quantity to insure an adequate supply of the attractant for future control tests.

It has become increasingly difficult to maintain an adequate treatment program at the periphery of the generally infested area. Residues associated with DDT and bee losses with Sevin have made it necessary to restrict their use to limited areas. This has left residual infestations that have increased and moved to new areas. Until alternate methods become available it will be necessary to utilize where possible present methods of control and regulatory procedures to minimize further spread. The Division and cooperating agencies expect to intensify research and methods work on alternate insecticides and biological control organisms.



### Hoja Blanca

The hoja blanca disease was found on three farms in Palm Beach County, Florida, in 1957. Subsequently a small infestation was located in Hancock County, Mississippi, in 1958. In 1959, the disease was found in 11 Louisiana parishes and the vector in three additional parishes. No further finds were made until the fall of 1962, when the vector was recorded again in seven Louisiana parishes on 34 properties, with 5,335 acres involved. An aggregate of 14,741 acres was treated in 1962 to eradicate the vector. In fiscal year 1963, neither the vector nor the disease was found in Louisiana.

Approximately five percent of the rice-growing area is surveyed annually. If either the vector or disease is found, inspection is increased to about 20 percent of the rice acreage around the infested area. In the States of Arkansas, Florida, Louisiana, Mississippi, South Carolina, and Texas, 221,070 acres were surveyed during 1963.

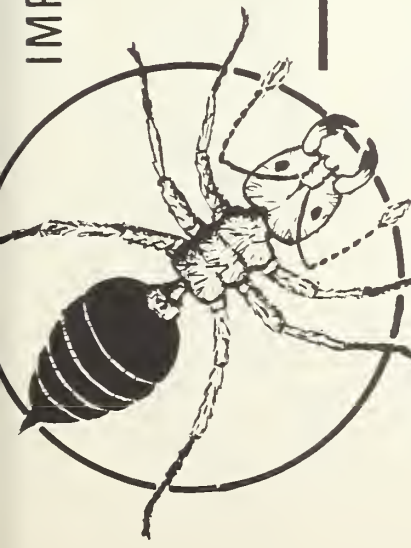
Three Sogata orizicola specimens were swept from rice plantings in Palm Beach County, Florida, on June 18, 1963, and subsequently the disease was found in one location. This was the first time the disease had been found since 1959 and is in the same general area where the infection occurred in 1957. An aggregate of 14,741 acres was treated to eradicate the vector in this outbreak.

### Imported Fire Ant

The mirex bait has been adopted as the standard treatment in the fire ant eradication program. More than 1.5 million acres received initial treatment with mirex during the fiscal year 1963. In addition, approximately 300,000 acres were treated with heptachlor to complete the second treatment of the split application begun earlier in the year. Since July 1, 1963, initial and repeat applications of mirex bait have been made on a total of 1,213,485 acres. During this period only 33,584 acres were treated with heptachlor.

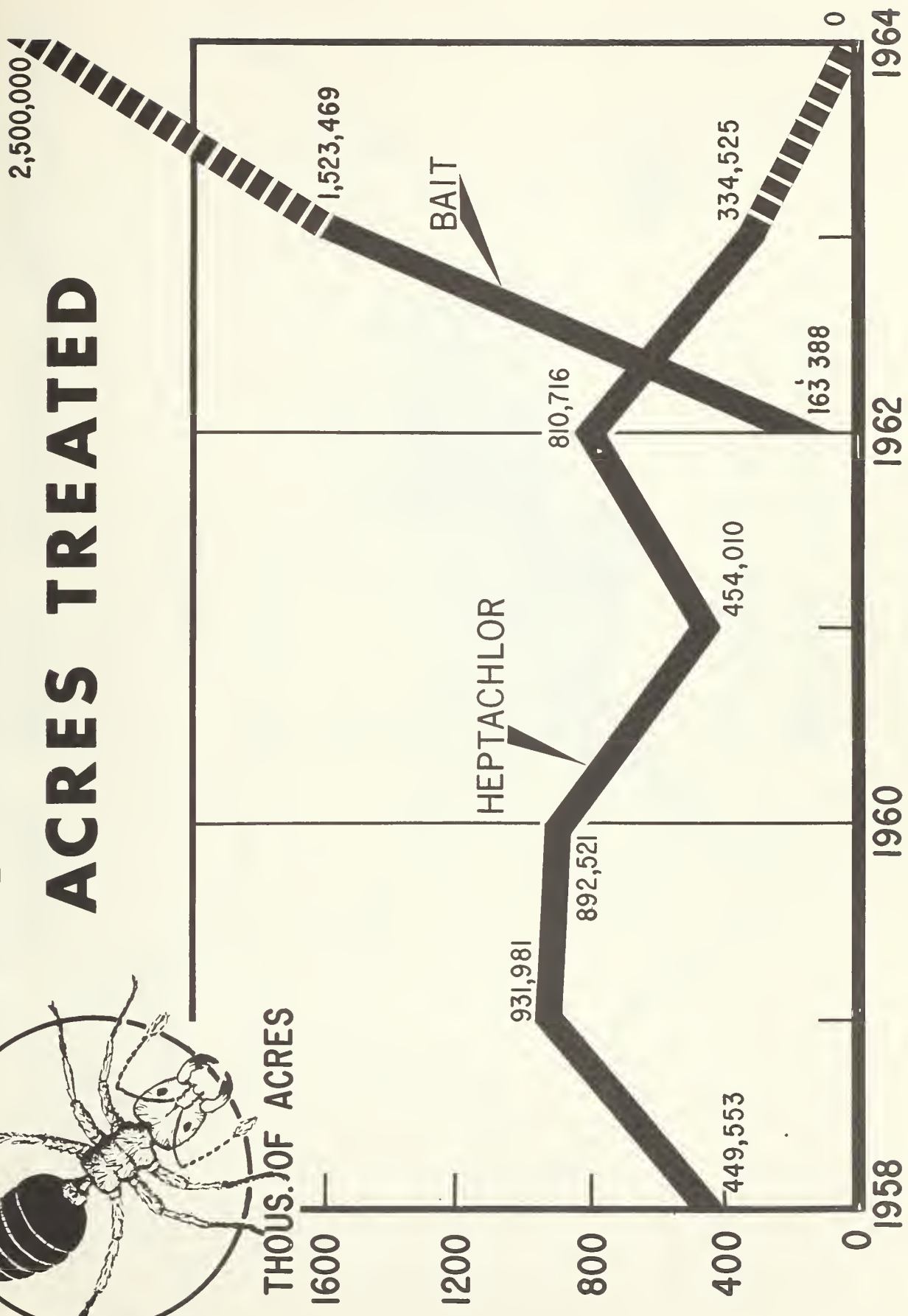
The bait is completely effective in destroying all mature colonies but there is recurring infestation from colonies that are immature at time of treatment. The need for two bait applications is indicated from our appraisal surveys and tests are now underway to determine timing of the second application. Methods improvement work is continuing to improve the formulation so that its effectiveness in the field will be prolonged.

Special emphasis has been given to aerial application phases of the program in an effort to reduce costs and increase the number of acres treated each year. It has been found that the bait material can be applied satisfactorily in wind velocities exceeding those normally limiting the application of clay granules.

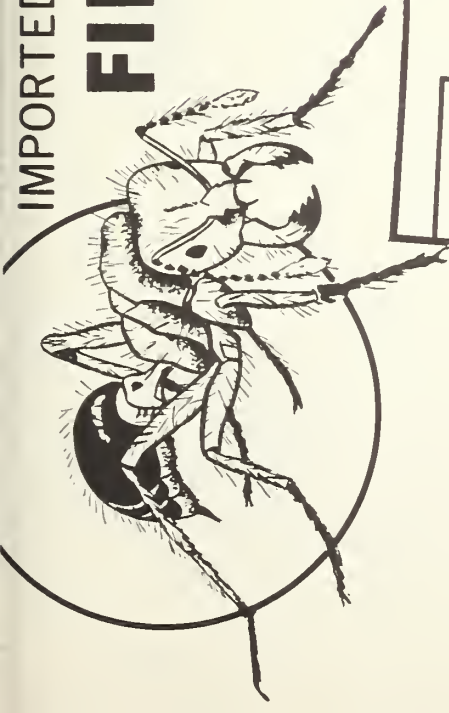


IMPORTED FIRE ANT

# ACRES TREATED

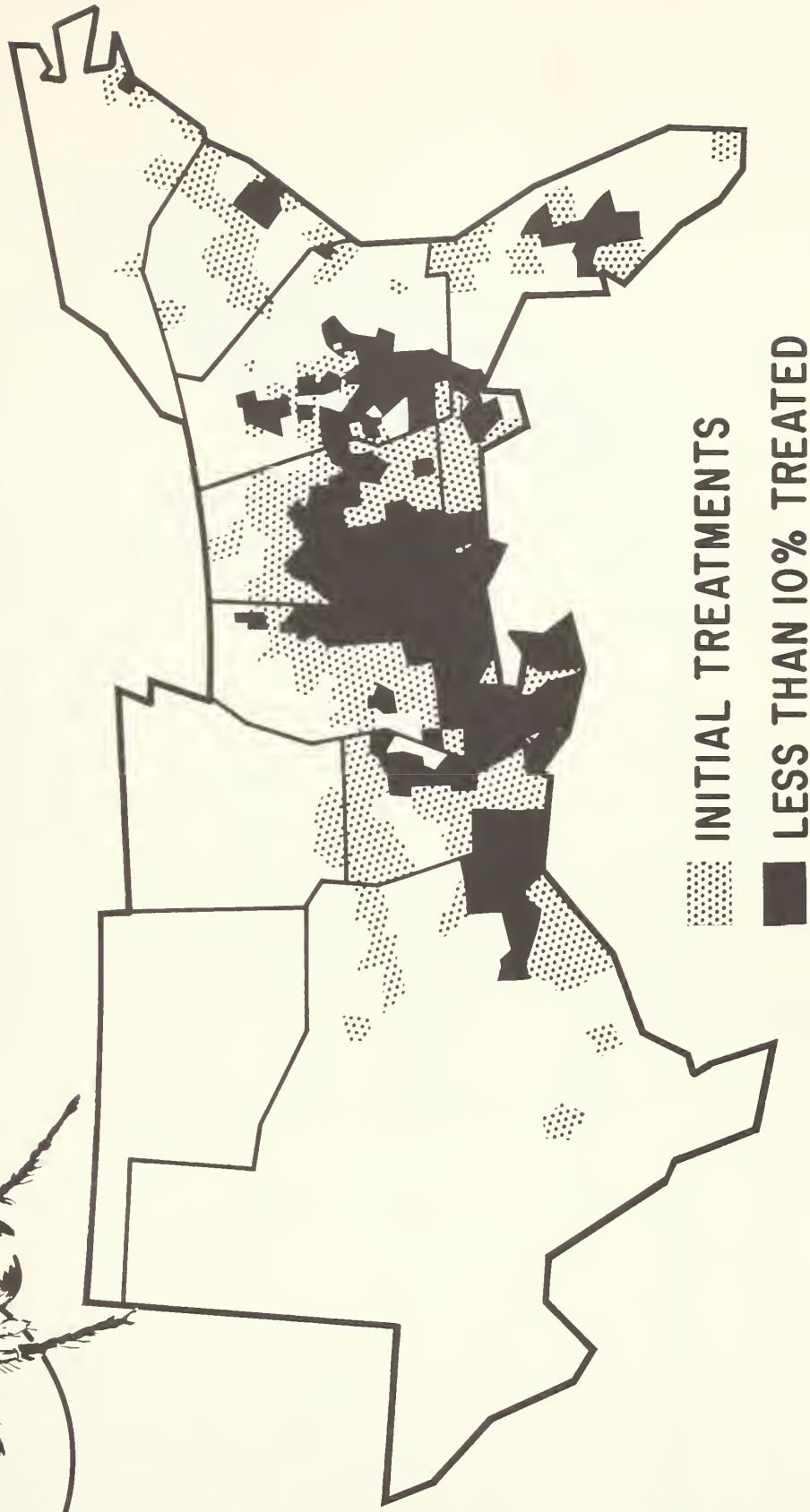






IMPORTED FIRE ANT

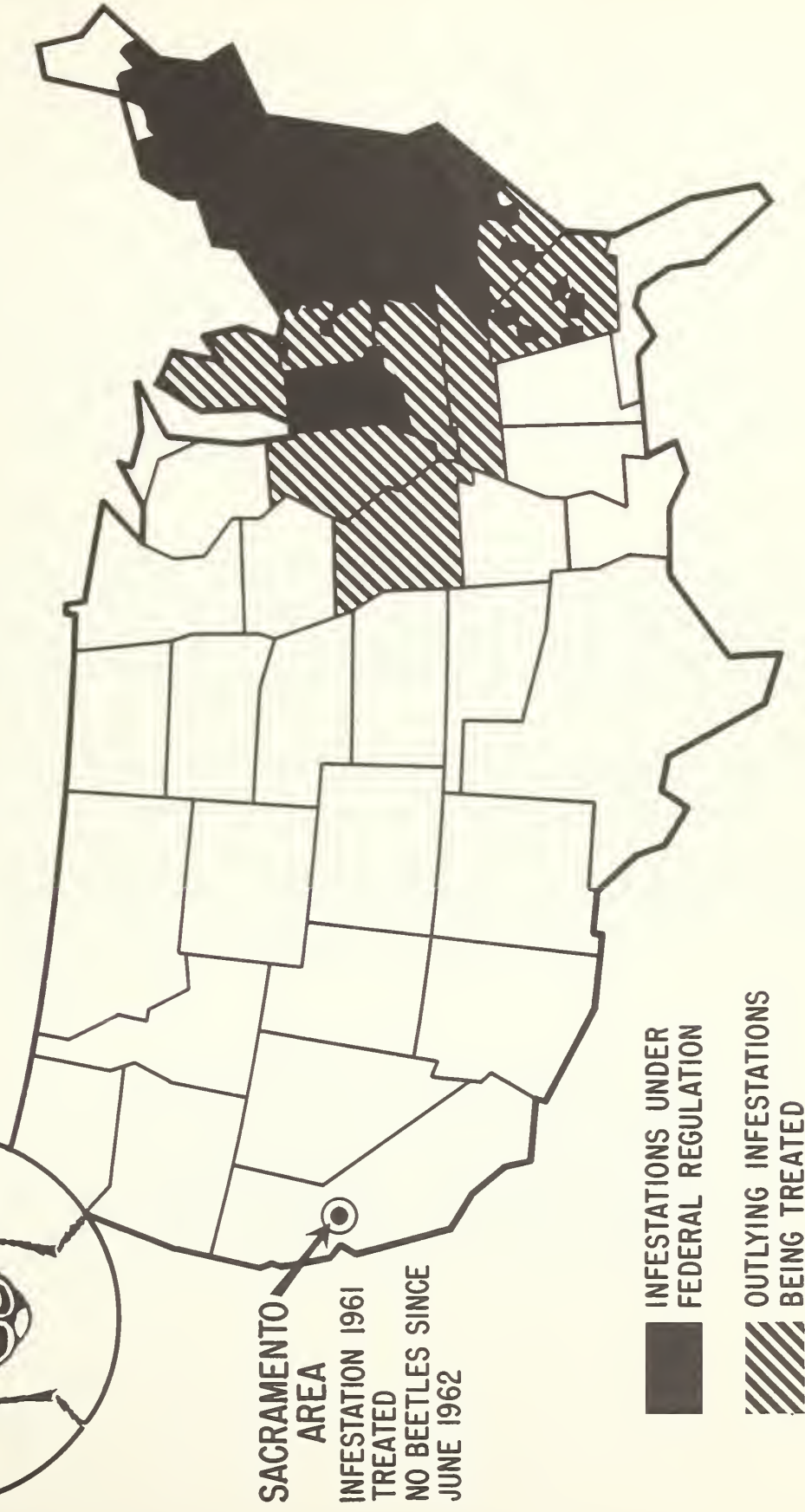
# FIRE ANT INFESTATIONS







# JAPANESE BEETLE





### Japanese Beetle

Results of the cooperative Federal-State program to eradicate a Japanese beetle outbreak in the Sacramento area of California continued to be encouraging during 1963. The last specimen of the pest was collected in June 1962. A total of 14,511 acres has been treated since the beetle was first found there in June 1961.

To locate possible spread from the generally infested area, over 60,000 traps were operated in 36 States during the 1963 beetle flight season. Findings from these survey operations provide the basis for eradication treatments in peripheral areas. No new long-distance spread of the pest was discovered in 1963; however, new infestations were discovered on the periphery of the area of general infestation. Among the more important of the new infestations were those at Battle Creek and Detroit, Michigan, and Mattoon and Charleston, Illinois. Since July 1, 1963, insecticide was applied to 21,277 acres in Michigan, 3,580 in Illinois, 1,109 in Ohio, and 6,411 in Tennessee.

### Khapra Beetle

Last year 31,057 properties were inspected in Arizona, California, New Mexico, Texas, and the Republic of Mexico, with only 17 found to be infested. All of the infested properties were in Arizona and this small flare-up was traced to a single infested feed mill. All infestations in the United States and Mexico have been treated. The last premise was released from Federal and State quarantine on December 3, 1963.

No khapra beetles have been found in New Mexico since May 1959, in Texas since April 1960, and in Mexico since 1961. The last infestation discovered in California was in January 1962; the last in Arizona, July 1962.

This past year detection surveys for khapra beetle were conducted on 33,799 properties in 37 States in the United States and seven States in Mexico. Since the khapra beetle continues to be intercepted regularly at ports-of-entry, intensive detection surveys are being continued.

### Mediterranean Fruit Fly

By continuing an extensive trapping program the Mediterranean fruit fly was apparently discovered shortly after it entered Florida for the third time in June of 1962. Because this infestation was detected promptly State and Federal personnel were able to initiate a regulatory and eradication program before the pest had become widespread. This infestation of the Medfly was successfully eliminated in April 1963. Only 723,000 aggregate acres required treatment in Broward, Dade, and Palm Beach Counties. The fourth invasion of the Mediterranean fruit fly was discovered in June 1963 near the Miami



International Airport. One additional male fly was found on August 28, 1963, at El Portal, Florida, which is near Miami. Prompt Federal and State action wiped out this infestation in five months by treating an aggregate of 72,565 acres. The last application was applied in October.

On November 26, 1963, following a period of 90 fly-free days, State and Federal regulations imposed under the Mediterranean fruit fly quarantine were lifted. Plans are now underway to continue the detection trapping program which gave State and Federal workers a distinct advantage in eradicating the last two invasions of the Medfly.

The Mediterranean fruit fly has increased both in intensity and in area in Central America. Because of modern highways and increased travel this is a distinct threat to the citrus areas in Mexico. Once the fly became established in Mexico, it would be difficult to prevent its entry into the United States. As an added precaution the United States and Mexico have placed 3,700 traps at the border areas of southern Mexico and at ocean ports to detect any infestation which might become established.

#### Mexican Fruit Fly

The Mexican fruit fly is established throughout much of the citrus area of Mexico. The fly migrates each fall and winter into southern Texas where it infests citrus in the Rio Grande Valley. At the beginning of each migration season, quarantine procedures are invoked and all fruit moves under regulation from infested Texas counties to other citrus-producing areas to prevent spread of the infestation. Currently, spread of the Mexican fruit fly into western Mexico constitutes a threat to citrus production areas in the western United States. A cooperative spray program in Mexico adjacent to the California border, plus strict quarantine measures, have kept western citrus areas free of the pest. One fly was trapped at San Ysidro, California, July 1; the first catch in the area since 1957. Several flies were also trapped near the border in Mexico. These areas were treated promptly.

During fiscal year 1963, protective treatments were applied by air to 600 acres and by ground equipment to some 230,000 host plants in the California border area.

#### Pink Bollworm

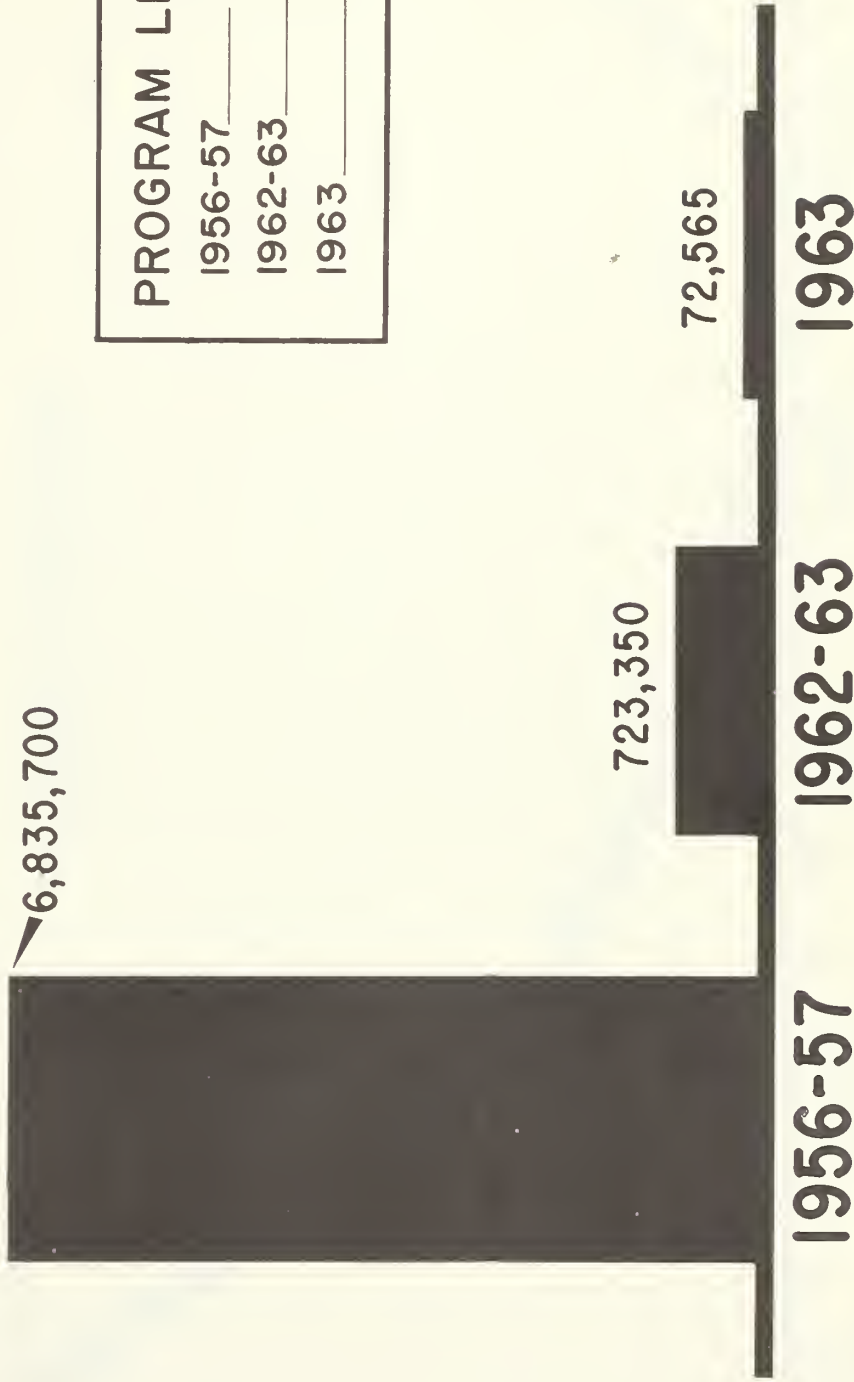
The pink bollworm infestation found in Arizona in 1959 required the treatment of 75,000 acres that year. By 1962, the acreage requiring insecticide applications had decreased to 1,200 acres. Inspection during the 1962 cotton crop season revealed only one larva from the eradication area, and only 223 acres required treatment in 1963. The recently discovered pink bollworm lure was used experimentally in the Arizona survey during the 1963 season. This new survey method offers much promise in improving surveys to detect the pest and to delimit known isolated infestations.



MEDITERRANEAN FRUIT FLY

# EARLY DETECTION PAYS

## ACRES TREATED



### PROGRAM LENGTH

1956-57 \_\_\_\_\_ 20 MO.

1962-63 \_\_\_\_\_ 11 MO.

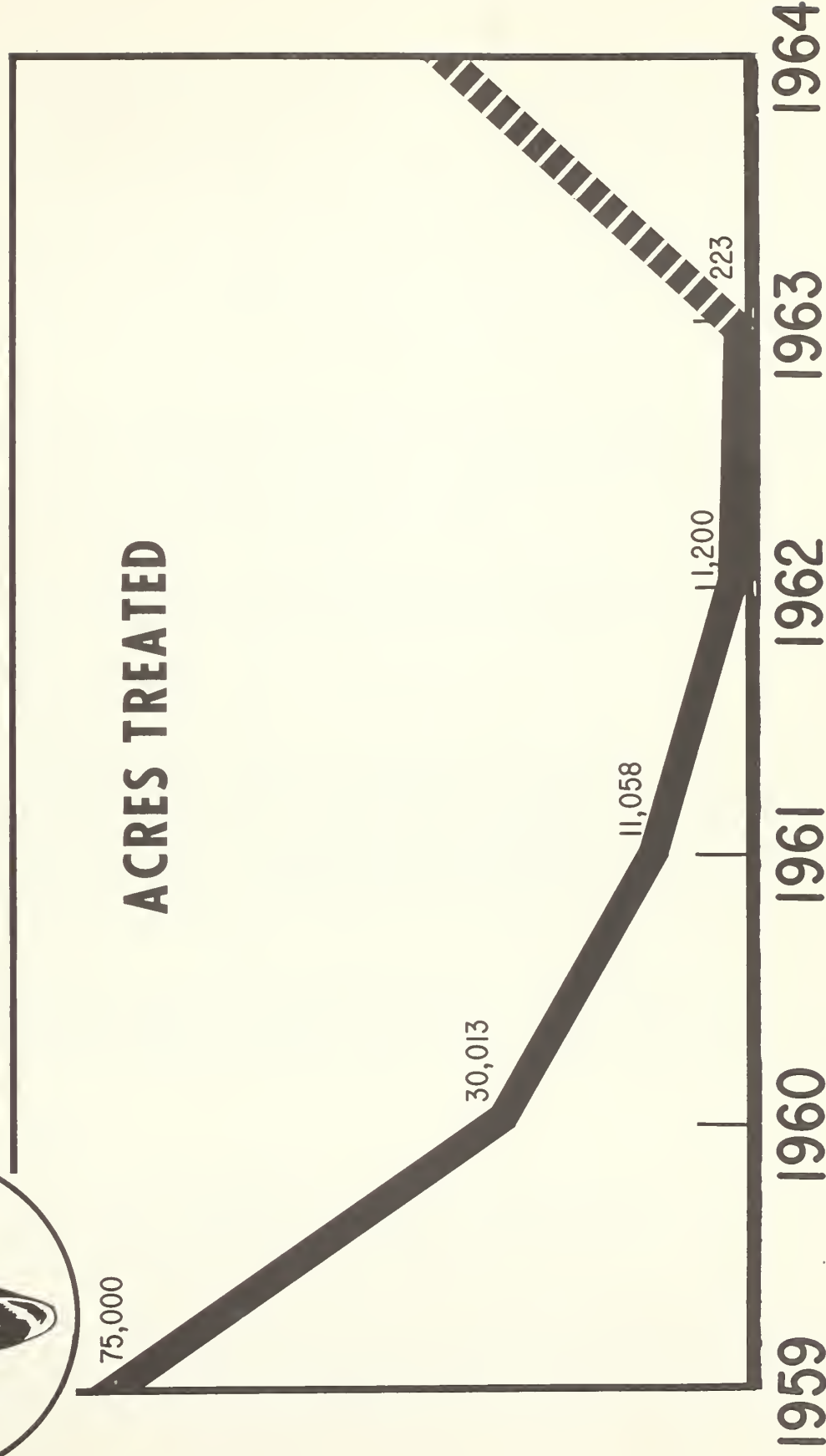
1963 \_\_\_\_\_ 5 MO.



PINK BOLLWORM



# CHEMICAL ERADICATION IN CENTRAL ARIZONA







Even though the pink bollworm situation early in the 1963 crop season continued to look very encouraging, the influence of the dry winter of 1962 did not become apparent until late in the season. Surveys have shown pink bollworm populations increased substantially in Louisiana and Arkansas. In Louisiana only 31 pink bollworms were found in 4 parishes during the entire 1962 season. So far pink bollworms have been discovered in 10 parishes with nearly as many pink bollworms found in De Soto Parish alone as were found in the entire State last year. In Arkansas only 2 pink bollworms were found in one county in 1962. As of November 1, 1963, inspections had discovered pink bollworm in 19 counties. Almost 200 pink bollworms have been found in gin trash this fall.

In central Arizona a similar increase in pink bollworm infestations occurred this past crop season. By late December gin trash inspections have revealed 61 properties infested in central Arizona, 37 in Pinal County and 24 in Maricopa County. All of these infestations which involve more than 3,300 acres are in the central Arizona eradication area.

In southeastern Arizona the pink bollworm had not heretofore caused serious losses. This season farmers have sustained serious loss indicating the need for an intensified program to reduce populations if this area is to continue cotton production.

#### Phony peach and peach mosaic

The low level of phony peach infection continued in the 1963 season with an incidence of 0.22 percent. Of the 6,577,622 peach trees inspected, only 14,169 infected trees were found. In 1962, the infection rate was 0.28 percent. The continuing decline of phony peach infection is attributed to the effectiveness of removal of infected trees and the destruction of wild plum, a carrier of the disease, together with the regular orchard spray schedules for the disease vector.

The peach mosaic infection rate had declined in 1962 to 0.03 percent from a high of 4.16 percent in 1935. In the 1963 season, 3,981,200 trees were inspected and 415 were found infected, an infection rate of only 0.01 percent. The number of infected trees found represents about one-third those found last year.

#### Soybean Cyst Nematode

In 1963 soybean cyst nematode surveys were conducted in 22 of the major soybean-producing States. Extensions of infested areas amounting to 22,149 acres were found in the eight previously known infested States. Surveys in other soybean-producing States have been negative.

In the eight States infested with soybean cyst nematode more than 109,000 acres have been found infested based on soil surveys. In some counties the infestation has not been delimited, but based on an estimate there probably are more than 350,000 total acres infested.

During the 1963 crop season soybean cyst nematode caused field damage in Arkansas, Missouri, North Carolina, and Tennessee. The degree of damage ranged from small spots in fields to entire fields.

The NC55 resistant black-seeded soybean was compared with the Lee variety in field trials in Arkansas, North Carolina, and Tennessee. The beans were planted on heavily infested land to evaluate their resistance and to determine whether resistant plants reduce nematode populations under different environmental conditions.

The results of these cooperative field tests indicated that the NC55 resistant variety is highly resistant to the soybean cyst nematode. In North Carolina NC55 out-yielded the Lee variety by four to one. The NC55 also produced substantially more beans than the Lee variety in Tennessee and Arkansas plots.

Plant breeders now have a yellow-seeded selection resistant to the soybean cyst nematode. However, it will take approximately three years to increase the seed for large-scale field testing.

#### Sweetpotato Weevil

Severe freezes in the winters of 1962 and 1963 destroyed wild host plant and sweetpotato crop refuse which enable the sweetpotato weevil to overwinter in fields throughout the infested area. This natural phenomenon offered an unusual opportunity to delimit and to eliminate infestations.

Until this time, regulatory activities to control the infestations required the use of all available resources. Following the freeze period an intensified program was undertaken against the sweetpotato weevil with approved releases from the Department's contingency fund, supported by additional State funds. Results of these expanded activities have been encouraging and have made it possible to continue an effective level of activities with funds regularly available for the program.

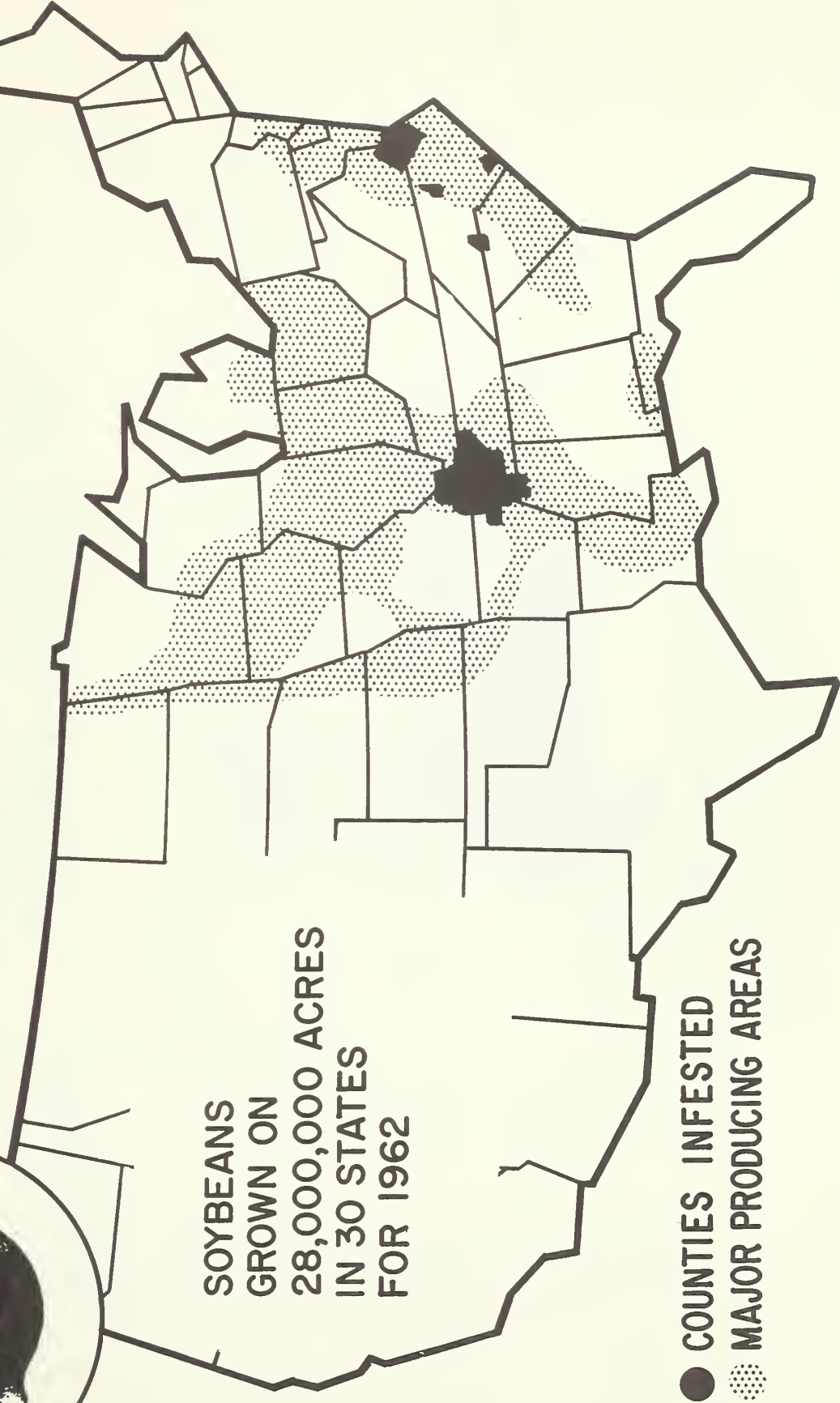
The northern boundary of the sweetpotato weevil infestation has been clearly established -- the true extent of the problem determined -- and substantial gains have been made in eliminating the pest. All infestations of the weevil have been eradicated from a commercial production area near Jackson, Mississippi and 400 of the original 500 infestations in the commercial area of southern Georgia have been eliminated. During the past two years, infestations have been eliminated from East Feliciana and West Feliciana Parishes in Louisiana. This area includes the St. Francisville section where the largest sweetpotato market in the State is located. Only 39 infestations remain in Alabama -- none in commercial areas -- and a substantial buffer zone has been established between the commercial sweetpotatoes grown in northeast Texas and the generally infested area to the south. Through vigorous control efforts sweetpotato weevil populations have been substantially reduced in the remainder of the infested area.

SOYBEAN CYST NEMATODE

# A THREAT TO THE NATION'S SOYBEAN INDUSTRY



SOYBEANS  
GROWN ON  
28,000,000 ACRES  
IN 30 STATES  
FOR 1962



- COUNTIES INFESTED
- MAJOR PRODUCING AREAS





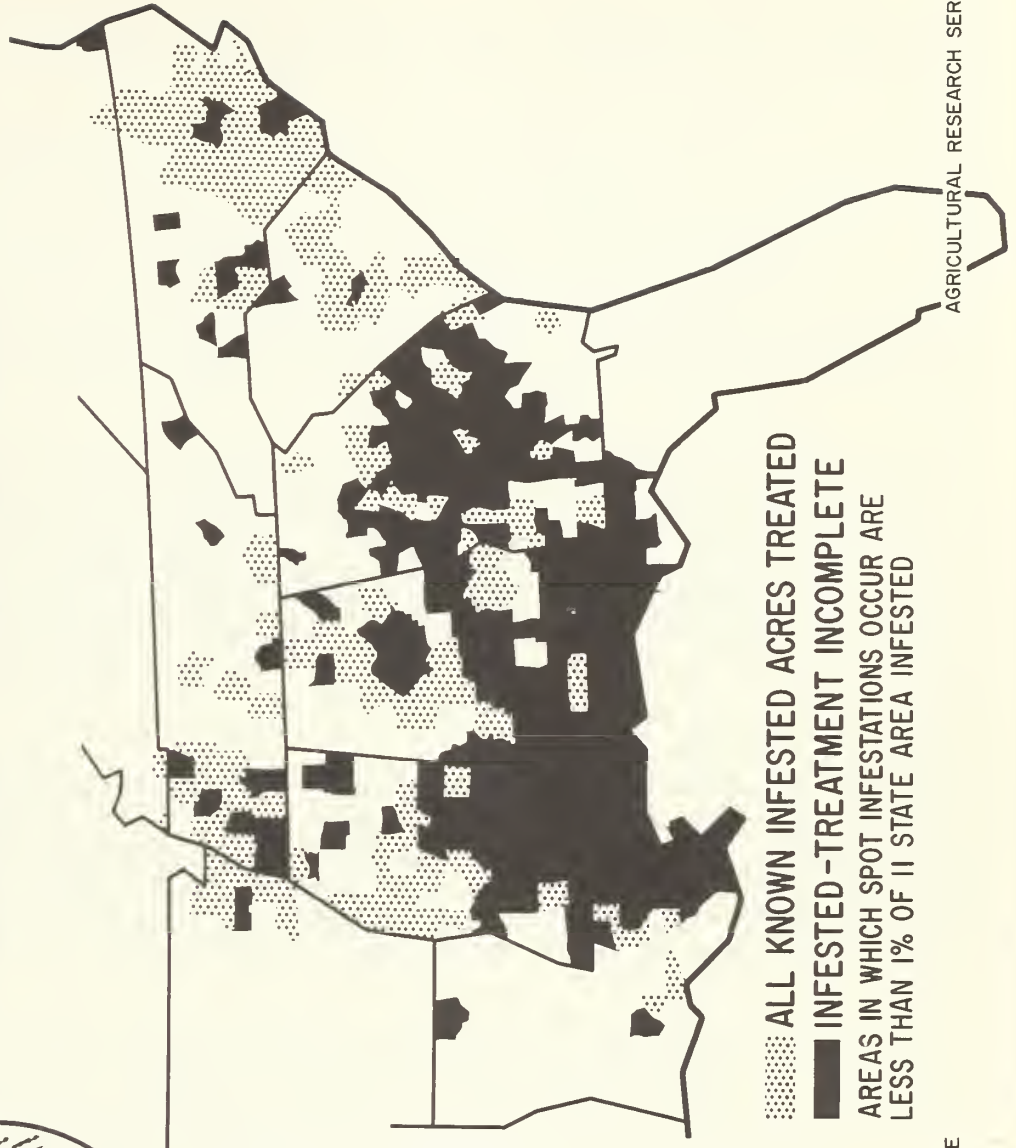


WHITE-FRINGED BEETLE

# ACRES INFESTED

June 30, 1963

Alabama	339,393
Arkansas	6,532
Florida	144,078
Georgia	443,398
Kentucky	16
Louisiana	65,432
Mississippi	280,540
N. Carolina	58,452
S. Carolina	7,364
Tennessee	90,833
Virginia	3,011





### White-fringed Beetle

During the past year significant increases in white-fringed beetle populations occurred throughout the generally infested area. Along with this increase in population density, 31 new counties were reported in the Southeastern States.

The outlying infestation in Kentucky has been treated and work is continuing in Arkansas in the 6 northeastern counties. In Virginia work has been delayed until the new infestations in the Norfolk area are delimited and mapped. Throughout the generally infested area more than 60,000 acres were soil-treated last year to eliminate heavy infestations. Regulatory treatments involved more than 10,000 acres of nursery. In heavily infested areas more than 1,000 acres were treated with foliage sprays to reduce populations. Methods improvement efforts are being intensified to find more effective ways of dealing with this pest.

During the year the white-fringed beetle quarantine regulations were revised to provide for suppressive areas within or adjacent to generally infested areas. This action will provide protection to areas being treated to eradicate the weevil by regulating the movement of host materials and other commodities into the area. A public hearing was held at Atlanta, Georgia, on January 23 to consider the extension of the white-fringed beetle quarantine to Arkansas and Virginia.

### Witchweed

Progress in witchweed eradication in the Carolinas was demonstrated in 1963 by the almost complete elimination of crop damage, the marked reduction in the infestation, and the prevention of spread to uninfested areas. The infestation pattern appears to have stabilized since it has changed very little after five years of survey and much of the increase in acreage was in the center of the known infested area. Only three new counties were found infested during the year.

Effective State and Federal quarantine regulations have greatly reduced the hazard of long-distance spread of the pest. Keeping the infested fields under herbicide treatments has helped to prevent local spread. Surveys conducted in 22 States showed the pest confined to the original area of infestation in North Carolina and South Carolina.

During 1963 an aggregate of 458,664 acres was treated with 2,4-D to prevent the production of the seed by the witchweed plants. On this program, 357,645 acres were treated in 24 counties in North Carolina, and 101,019 acres in 10 counties in South Carolina.

Methods improvement activities included field tests using post-emergence herbicides as substitutes for 2,4-D, as well as preplanting and pre-emergence herbicides that can be used on corn, cotton, tobacco, and soybeans.



## Plant Pest Detection

The importance of the early detection of new insect pests was further emphasized in 1963 when detailed surveys revealed that the cereal leaf beetle, Oulema melanopa, first discovered in July of 1962, had spread over additional counties in the States of Indiana and Michigan, and was found for the first time in Ohio, thus complicating the possibility of eradication. Continuous trapping for the Mediterranean fruit fly in Florida again revealed an incipient infestation on June 17 near the international airport in the city of Miami but the discovery was made in time to permit the immediate application of eradication treatments. While there were six insect species reported for the first time in the United States in 1962 fiscal year, only three were reported in fiscal year 1963. None of them appear to be of economic importance although very little is known about two of the whiteflies, Dialeurodes kirkaldyi, first found in Key West, Florida, late last fall; and Aleurotrachelus jelinekii found in California this spring.

The rice delphacid, Sogatia orizicola, found in Louisiana last year for the first time since 1959, was found in Florida in June for the first time since 1957, as the result of continuing detection surveys. The European chafer, Amphimallon majalis, was found for the first time in Pennsylvania. Cooperatively financed survey entomologists in 25 States continue to strengthen the overall survey effort. Three States--Indiana, Michigan, and Ohio--came into the program in 1963. The Cooperative Economic Insect Report, wherein the nationwide reports are published, continues to be in demand and now reaches approximately 3,500 individuals each week.

PPC-ARS

3-9-64





# NEW INVESTIGATIONS OF GOLDEN NEMATODE BY YEARS

Year	No. of Properties	Gross Acres	Remarks
1941 (Calendar)	2	116	First discovered in U. S.
1942	9	542	
1943	8	437	
1944	5	143	
1945	5	166	
1946	41	1,656	
			Golden nematode project established--systematic soil sampling began.
1947	53	2,823	First Suffolk County
1948	33	1,252	First Commack, New York
1949	29	1,013	
1950	28	893	Bridgehampton, New York
1951	26	848	Cutchogue, New York
1952	25	1,052	Mt. Sinai, New York
1953	27	1,157	
1954	8	409	
1955	5	215	St. James, New York
1956	3	153	None in Nassau County
1957 (Fiscal Year)	8	272	
1958	6	504	
1959	11	687	
1960	15	644	
1961	10	828	
1962	2	113	
1963	6	305	
1964			
1965			
Totals	365	16,228	

## Authority:

1941-57 Annual Report

1958-60 Manual Report

1961 to date Punch Cards

Plant Pest Control Division  
Agricultural Research Service  
Control Operations  
March 18, 1964





# GOLDEN MEFATODE

Year	Infested Land at Beginning of Each Year (Gross Acres)	Land Found Infested During Year (Gross Acres)	Land Removed from Agriculture by Real Estate (Gross Acres)	Land Treated and Released for Potato Production (Gross Acres)	Agriculture Land Remaining to Be Treated (Gross Acres)
1941-					
55 Inc.	12,722.17	-	1,452.18	-	7,867.99
1956	12,722.17	153.00	796.96	10.00	5,236.03
1957	12,875.17	271.62	103.37	-	5,404.28
1958	13,146.79	503.94	-	10.61	5,897.61
1959	13,650.73	687.30	691.47	67.32	5,826.12
1960	14,338.03	643.94	876.57	656.31	4,951.53
1961	14,996.32	227.63	107.20	1,275.63	4,381.88
1962	15,209.50	113.00	624.17	783.11	3,087.60
1963	15,922.50	304.95	451.06	511.50	2,429.99
1964	16,227.45		10,422.98	3,314.48	
Totals					

## Breakdown of Land Remaining

As of December 31, 1963 - 2,400.99 Acres

Vegetable crops	782.30
Cultivated soil	459.24
Developing now	261.23
Real Estate and Estates	430.59
Schools, N.Y.S., Parks	357.76
Pasture-Horse Academy	108.57

Grand Total United Nations  
Agricultural Research Service  
During Operations  
March 18, 1964









COOPERATIVE PROGRAMS  
PLANT PEST CONTROL DIVISION

CENTRAL REGION

FISCAL YEAR 1963



*Oulema melanopa*

**AGRICULTURAL RESEARCH SERVICE**  
**United States Department of Agriculture**



## TABLE OF CONTENTS

	<u>Page</u>
Introduction . . . . .	1
Organization Chart . . . . .	2
Cooperative Federal-State Programs	
Barberry Eradication . . . . .	3
Cereal Leaf Beetle . . . . .	9
Economic Insect Survey . . . . .	13
European Chafer . . . . .	15
Golden Nematode . . . . .	15
Grasshoppers . . . . .	15
Gypsy Moth . . . . .	17
Japanese Beetle . . . . .	17
Khapra Beetle . . . . .	19
Peach Mosaic . . . . .	19
Phony Peach . . . . .	19
Pink Bollworm . . . . .	20
Soybean Cyst Nematode . . . . .	21
White-fringed Beetle . . . . .	24
Associated Activities . . . . .	25



## INTRODUCTION

The <sup>Central</sup> Plant Pest Control Division of the United States Department of Agriculture serves thirteen states in North-Central United States. A regional supervisor and his staff are responsible for all of the cooperative program activities operating in this territory. Field operations come under the immediate direction of eight resident supervisors in charge.

Appropriate State officials actively participate in the survey, control, and regulatory phases of all programs. They participate in the planning, provide funds, equipment, and services, and employ seasonal help as needed to conduct the various functions of the programs.

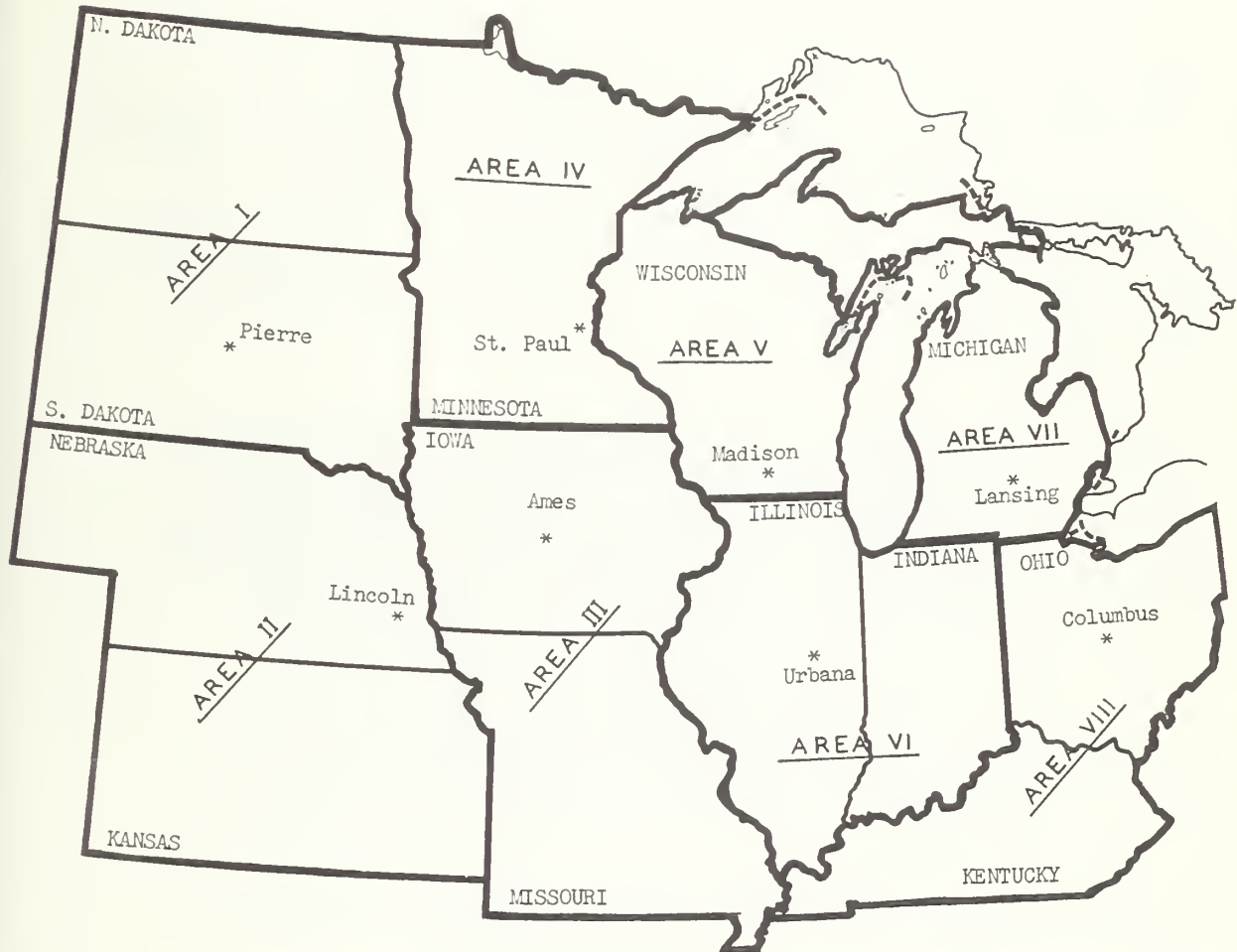
Valuable cooperation was received from the State Extension Services through county agents and specialists. They provided facilities to disseminate program information through the press, radio, television, and meetings. State Experiment Stations in several instances provided office, greenhouse, or storage space for field personnel. Station personnel also cooperated by providing technical advice and information concerning problems associated with PPC programs.

Representing industry in nearly all phases of agriculture, the Crop Quality Council actively supports the Division's programs at National, State, and local levels of government. Extensive observations by the Council's staff provide invaluable information concerning the prevalence and severity of insects and plant diseases. These extensive field observations make it possible for them to forecast crop damage and estimated losses. Informational materials are provided by the Council for distribution as program aids. During the past year, in the absence of any other publications, they provided an urgently needed circular concerning the cereal leaf beetle, a new pest found in Michigan for the first time in 1962.

O R G A N I Z A T I O N

CENTRAL PLANT PEST CONTROL REGION

Headquarters  
Minneapolis, Minnesota



\*Location of area headquarters.

COOPERATIVE RUST LABORATORY, located at  
the Farm Campus, University of Minnesota,  
St. Paul, Minnesota.

## BARBERRY ERADICATION

Good progress was made in the barberry eradication program during the year. Some adjustments and realignment of work plans were necessary due to severe winter weather and overabundance of moisture in the spring. Work units in several states were re-assigned to locations where conditions would permit effective survey and eradication work.

Particular interest was focused on the eradication work in several areas in Ohio during the year. These areas fell behind the regular survey interval and emphasis was placed on bringing these infestations back to the regular schedule of rework. The importance of properly scheduled rework is clearly illustrated by the situation in Geauga County, which originally was one of the most heavily infested areas in the State. During the current year, 74 square miles were reworked and 123 of the 284 properties on which bushes previously had been destroyed were reinfested. In addition, 30 new properties were cleared of bushes. A total of 19,298 bushes was destroyed, of which an estimated 5 percent was in the fruiting stage.

Surveys in the other states continued to make satisfactory progress. Only a limited amount of territory was placed on maintenance due to the fact that most surveyed areas consisted of rugged terrain, making for very slow progress. These areas in the past were heavily seeded, and new bushes continue to appear. Several positive reports received from former workers and other agency employees resulted in the eradication of numerous bushes on a few old and two new properties.

Also, an unusual number of new properties with large fruiting bushes were found during the year's rework in locations where the bushes had been cut off continuously in previous years and overlooked by survey crews. During the year, 28,633 barberry bushes were destroyed on 845 properties.

In Minnesota, the barberry bounty plan was renewed with 69 of the State's counties. Bounties paid by the counties for authentic reports of barberry locations range from \$2 to \$10.

Authorizations were approved for 205 nurseries and 44 dealers to ship barberry, mahonia, and mahoberberis interstate in accordance with the provisions of the Black Stem Rust Quarantine 38.

Barberry Eradication Accomplishments - Fiscal Year 1963

State	: Square : Miles : Surveyed	: Old Prop- : erties Re- :inspected	: Total : Properties : Infested	: Nursery Es- : tablishments : Inspected	: Total : Bushes : Destroyed
Illinois	69	130	20	33	378
Indiana	6	36	1	13	1
Iowa	573	513	87	8	2,242
Kansas	1,637	120	37	18	336
Kentucky	-	-	-	15	-
Michigan	246	753	228	28	2,122
Minnesota	163	287	79	53	407
Missouri	49	23	9	10	16
Nebraska	34	82	6	3	12
North Dakota	6	7	0	3	0
Ohio	148	412	183	57	19,485
South Dakota	0	0	0	2	0
Wisconsin	<u>365</u>	<u>667</u>	<u>195</u>	<u>7</u>	<u>3,635</u>
Totals	3,296	3,030	845	250	28,634

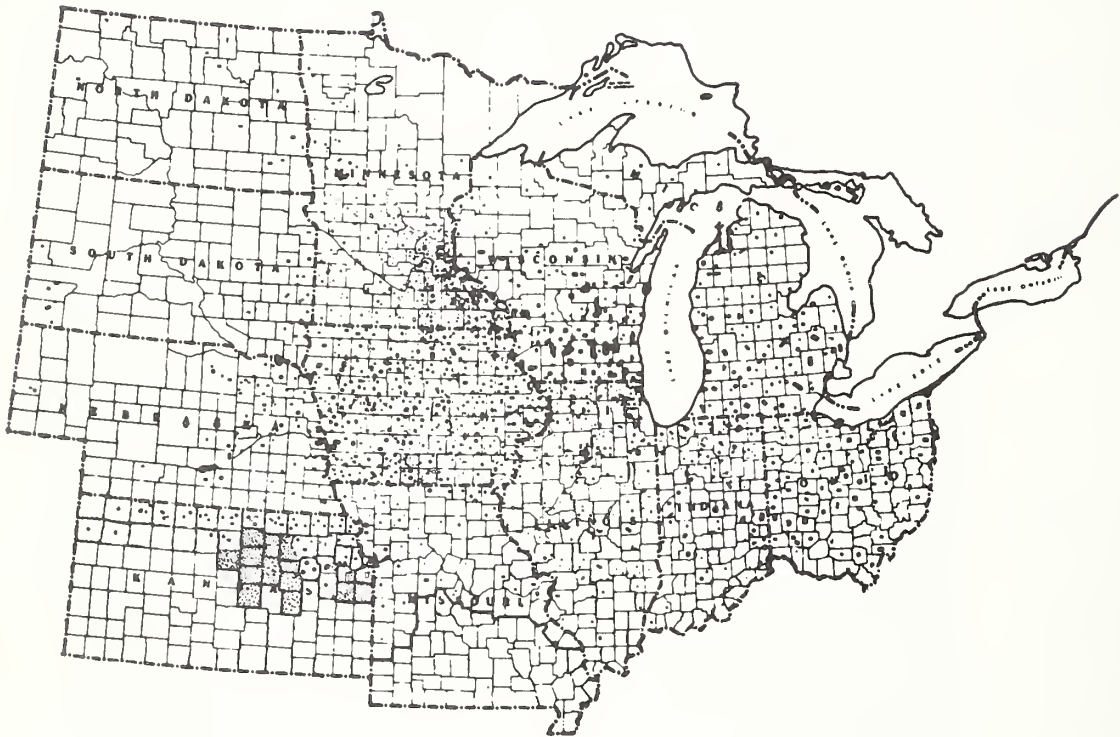





Entomologist Aid G. Hamon (left) and PPC Aid L. Porterfield beginning to cut down large single Berberis vulgaris bush found in Cawker City, Mitchell County, Kansas, in 1963. The stumps were treated with ammonium sulfamate.



## BARBERRY ERADICATION - CENTRAL REGION

STATUS JULY 1, 1963



	Area requiring intensive work	13,089	square miles
	Areas requiring farmstead work	10,524	square miles
	Area on maintenance	652,999	square miles

PRESENT STATUS, PROGRESS, AND FUTURE REQUIREMENTS, 1916-1963

State	Square Miles										Properties										Barberry Bushes Destroyed			
	Total in State		Number Covered		Number Requiring Work		No. Requiring		No. Requiring		Total Founding		No. Needing One or More Replantings		Number Com-pleted		Common		Native		Total to Date			
	to be Worked		Farmstead : Inten- sive		Farmstead : Inten- sive		Initial : Rework		Initial : Rework		Initial : Rework		Initial : Rework		Initial : Rework		Initial : Rework		Initial : Rework		Initial : Rework		Initial : Rework	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Illinois	56,043	56,043	34,679	4,659	7,938	0	0	0	713	55,330	20,066	2,603	17,463	2,661,456	89,781	2,751,237								
Indiana	36,045	36,045	27,329	8,405	3,519	0	299	14	199	35,533	7,014	742	6,272	200,071	212,118	412,189								
Iowa	56,167	56,167	44,526	4,772	13,158	0	221	213	3,734	51,999	15,902	4,651	11,251	1,328,691	125	1,328,816								
Kansas	32,831	22,827	0	0	0	10,004	0	0	306	22,521	374	374	0	6,318	1	6,319								
Michigan	57,481	57,481	26,637	17,096	11,700	0	0	0	1,117	56,364	19,463	4,598	14,865	6,745,814	16	6,745,830								
Minnesota	80,883	80,883	32,958	28,742	8,689	0	0	0	1,190	79,693	9,413	2,237	7,176	1,016,741	0	1,016,741								
Missouri	37,251	19,724	17,722	789	1,006	0	0	27	183	37,011	1,944	684	1,260	24,678	0	24,678								
Nebraska	77,268	77,268	36,832	34,966	7,425	0	0	0	448	76,820	4,956	241	4,715	149,304	0	149,304								
North Dakota	70,183	70,183	1,276	30,105	430	0	0	0	21	70,162	1,084	12	1,072	39,565	0	39,565								
Ohio	40,740	40,740	32,197	6,289	12,747	0	0	0	1,838	38,902	17,761	2,626	15,135	3,822,102	0	3,822,102								
South Dakota	76,868	76,868	12,906	4,538	1,531	0	0	0	208	76,660	1,574	87	1,487	136,490	0	136,490								
Wisconsin	54,852	54,852	21,314	23,886	12,357	0	0	0	2,878	51,974	18,151	4,837	13,314	5,733,952	0	5,733,952								
Totals	676,612	649,081	288,376	164,247	80,500	10,004	520	254	12,835	652,999	117,702	23,692	94,010	21,865,182	302,041	22,167,223								

### Stem Rust\*

Stem-rust damage to hard red winter wheat was again serious in 1962. The loss in the epidemic area from northern Kansas to North Dakota and eastern Montana totaled over 45 million bushels, approximately 8 million more than the winter-wheat loss in 1961. Percentage reduction in yield was as follows: Kansas 4, Nebraska 30, Iowa 17, Wyoming 6, South Dakota 60, North Dakota 62, and Montana 10. There was no appreciable loss in Texas, Oklahoma, and southern Kansas, where wheat matured early; and aggregate damage was light east of the Mississippi River, with an estimated 3 percent in Illinois and Wisconsin but 1 percent or less elsewhere.

Damage to the spring bread wheats was negligible because of the predominance of Selkirk, which was resistant to the prevalent rust races. There also was only a trace of damage to durum wheats in Minnesota, South Dakota, and Montana. In North Dakota, however, where some durum was 3 to 4 weeks later than average, there was an estimated loss of 2 percent, mainly due to rust in late fields of Langdon. Although most of the acreage of the newer durum varieties Wells and Lakota was free of rust, appreciable amounts developed in some late fields of Lakota, apparently a result of mixtures within the variety.

Oats, rye, and barley were not measurably affected by stem rust, aside from a 3-percent loss to barley in Wyoming.

Early in the season there was a relatively small amount of inoculum in the South. A severe winter (1961-62) and cold spring, with drought in various sections of Texas, were unfavorable for winter survival and spring development of stem rust. Nevertheless the rust swept northward over an extensive area earlier than usual and broke records for early appearance in May in Nebraska and South Dakota. Because grain was late in the northern part of the winter-wheat area, and growth was lush, there was a long and favorable season for rust increase. Spores in the air reached record-breaking counts at some slide-exposure stations in June--e.g., nearly 3 million per square foot of surface at Lincoln, Nebraska, on June 4--and unusually devastating damage resulted to the commonly grown, susceptible winter wheats.

Wheat stem rust. Race 56 predominated among races of wheat stem rust for the fifth consecutive year and was responsible for most of the damage to the winter wheats. Among the 657 uredial isolates identified from rusted collections of wheat, barley, and wild grasses, race 56 comprised 61 percent; race 15B, 19 percent; 17, 14 percent; 11, 4 percent; and 6 other races together, 2 percent.

---

\*This report includes information concerning stem-rust development in some states outside the Central Plant Pest Control Region.

Race 17, more common than it has been since the early 1950's, was usually found in mixtures with race 56. In the hard red winter-wheat area, race 56 constituted 79 percent of the isolates and race 17, 10 percent.

As in the two preceding years, race 15B was especially prevalent in the spring-wheat area, where it comprised 39 percent of 250 isolates. The isolate virulent on Langdon-durum seedlings, designated as 15B-2, accounted for 93 percent of the total of 122 isolates of 15B in the United States. The Selkirk-attacking isolate, 15B-4, was found once in Minnesota.

Virulent isolates of race 32, designated as 32A and 32B, was identified once each from North Dakota and Texas, respectively. Race 32A attacks seedlings of Selkirk, Frontana x (Kenya 58-Newthatch), and Bowie. Race 32B attacks these same varieties plus seedlings of Lee and Kenya Farmer.

Among 70 aecial collections from barberry, 13 races and sub-races were identified, of which 7 were found only on barberry. The new 32A was obtained once from a Wisconsin barberry collection, and 15B-4 from barberry in Wisconsin, Iowa, and New York.

Oat stem rust. For the second year, race 6 of oat stem rust was the most prevalent race and comprised 69 percent of 290 uredial isolates. Among 14 other races identified, 7A (combined with 12A) comprised 14 percent; 7 (with 12), 6 percent; 2 (with 5), 5 percent; 6A, 2 percent; and other races, 4 percent. The virulent 6AF, which attacks oat varieties with genes A, BC, D, E, and F, was isolated once each from Minnesota and Wisconsin collections.

Among 15 aecial isolates of oat stem rust, 10 races and sub-races were identified, 4 of which were found only on barberry. Race 2B, virulent on Saia oat seedlings, was found for the first time.

#### Barberry Susceptibility Tests

Thirty species and varieties of Berberis and Mahonia were tested in 1962 for susceptibility to stem rust (Puccinia graminis). Inoculum consisted principally of the wheat, rye, and redtop varieties of stem rust. Nineteen that had been resistant in previous tests were retested with other collections of stem rust and remained resistant. One--Berberis heterosphylla--was released for sale. Of 11 tested for the first time, 4 were released--Mahonia piperiana and 3 varieties of B. thunbergi. A resistant hybrid between B. candidula and B. thunbergi was not released because of similarity of its common name with another hybrid that had not been tested. The remaining 25 are being tested further.



## CEREAL LEAF BEETLE

The cereal leaf beetle (Oulema melanopa) was identified for the first time on the North American continent from a collection obtained in Berrien County, Michigan, on July 17, 1962. Confirmation of this collection was made by the Insect Identification and Parasite Introduction Research Branch, Entomology Research Division. It is not known how long the beetle had been established in the area or how it gained entry. The Berrien County Agent reported that it had been observed in the county in 1960, following reports by farmers of damage, and again in 1961, and 1962.

Further survey late in the summer of 1962 by PPC and State personnel found the beetle present in scattered locations in Berrien and Cass Counties, Michigan, and in St. Joseph and La Porte Counties, Indiana.



Cereal leaf beetle damage to young wheat plants. Leaves turn white where shredded by the beetle. Yield in infested fields will be reduced, or the crop may be entirely destroyed.

Young wheat, oats, and barley plants were damaged so severely by the beetle larvae that in many instances it was necessary to plow under the crop. Adult beetles fed on various wild grasses and lower leaves of the younger corn plants after the small grain was harvested.

Quarantine measures were initiated by the States of Indiana and Michigan in the fall of 1962. Areas placed under regulation included parts of Berrien and Cass Counties, Michigan, and St. Joseph and La Porte Counties, Indiana.

Survey in 1963 was started on March 17 in Michigan and Indiana. By the end of fiscal year 1963, the beetle had been found in 25 counties in northern Indiana, 15 counties in southwest Michigan, and in one county in northwestern Ohio.

Federal and State personnel have cooperated in all phases of the cereal leaf beetle program: namely, survey, regulatory, research; and in plans for suppression, control, and methods improvement. These activities are all of equal importance and emphasis will be placed on them as the need arises.

CLB Control Accomplishments - Fiscal Year 1963

State	: Prop- : erties		: Prop- : erties		: Acres Treated		: Regulatory Inspection		
	: Sur- :veyed	: In- :festes	: Acres :Infested	: erties :treated	: Ground : Air	: Acres	: Prop- : erties	: Other : Acres	: Other
Ill.	113	0	0	0	0	0	0	0	0
Ind.	2,310	389	11,419	172	30	4,010	102	435	366
Iowa	591	0	0	0	0	0	0	0	0
Ky.	54	0	0	0	0	0	0	0	0
Mich.	15,910	3,757	300,560	0	0	32,661	287	1	2,481
Mo.	85	0	0	0	0	0	0	0	0
Ohio	314	14	70	0	0	0	0	0	0
Wis.	<u>418</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Totals	19,795	4,160	312,049	172	30	36,671	389	436	2,847

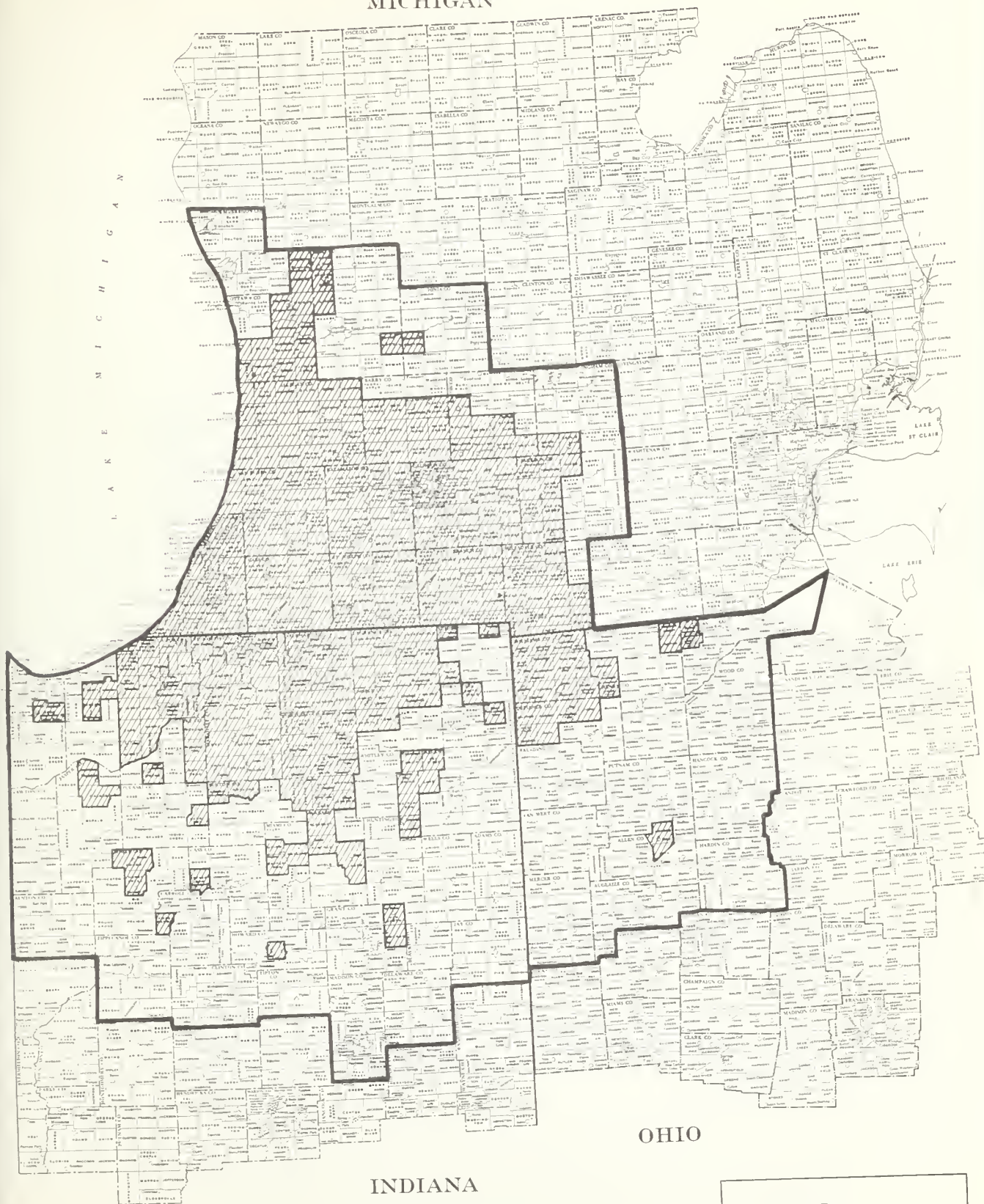


Planes and helicopters were used to spray fields for control of the cereal leaf beetle.



# CEREAL LEAF BEETLE - STATE QUARANTINES

## MICHIGAN



OHIO

INDIANA

### LEGEND:

- QUARANTINE BOUNDARY
- ▨ REGULATED AREA



## ECONOMIC INSECT SURVEY

Cooperative economic insect survey agreements are now in effect in 11 of the 13 states in the Central Region. States employing survey entomologists for the first time were Michigan and Ohio. Indiana cooperators have also signed a survey agreement and expect to employ a survey entomologist in the near future. Central Region states having survey entomologists in their employ are Illinois, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Other states contribute weekly or intermittent insect condition reports during the active reporting season.

Survey entomologists are employees of the state in which they work. They make weekly surveys and also receive insect condition reports from various State and Federal personnel and other cooperators. The data obtained is submitted to a State clearing office for summarization. It is then released to various State agencies, individuals, commercial firms, pesticide dealers, radio and TV stations, etc., and to the Plant Pest Control Division for inclusion in the Cooperative Economic Insect Report.

Insect detection workshops were held this year at Gull Lake, Michigan; Columbus, Ohio (for Ohio and Kentucky); and at Manhattan, Kansas (for Kansas and Nebraska). State and Federal employees, University personnel, students, and other interested parties attended and participated in these workshops.

Plant Pest Control personnel assisted cooperators with special surveys. These surveys included the beet leafhopper survey in southwestern Kansas, the chinch bug survey in Illinois, Iowa, Kansas, and Nebraska, and the potato psyllid survey in western Nebraska.

The annual fall European corn borer survey was made by State personnel in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

Dutch elm disease continued its westward advance in the Central Region. Additional infested trees were found in east-central Minnesota. It was also reported as prevalent in southeastern Nebraska.

Cooperative Economic Insect Survey - CPPC Region

State	Survey : Entomologist :	Reporting : Period :	Survey : Coordinator :	Location
Illinois	Clarence White	1/1 - 12/31	Dr. H. B. Petty	Urbana, Illinois
Indiana		3/1 - 12/31	Dr. J. V. Osmun	W. Lafayette, Indiana
Iowa			Dr. Wilfred Craig	Ames, Iowa
Kansas	Leroy Peters	1/1 - 12/31	Dr. Herbert Knutson	Manhattan, Kansas
Kentucky			Dr. Lee Townsend	Lexington, Kentucky
Michigan	Alfred Dowdy	3/1 - 12/31	Dr. Gordon Guyer	E. Lansing, Michigan
Minnesota	Robert Flaskerd	4/1 - 12/31	Dr. Donald Coe	St. Paul, Minnesota
Missouri	Ralph Munson	1/1 - 12/31	George W. Thomas	Columbia, Missouri
Nebraska	Paul Bergman	4/1 - 12/31	Dr. R. E. Hill	Lincoln, Nebraska
North Dakota	Richard Frye	4/1 - 10/31	Dr. J. R. Dogger	Fargo, North Dakota
Ohio	William Lyon	4/1 - 12/31	Dr. R. W. Rings	Wooster, Ohio
South Dakota	Sherwin Hintz	3/1 - 11/30	Dr. R. J. Walstrom	Brookings, South Dakota
Wisconsin	Marlin Conrad	3/1 - 12/31	Philip W. Smith	Madison, Wisconsin

### EUROPEAN CHAFER

The European chafer has not been found in the Central Region to date.

Twenty-five black light and 12 chemical traps were operated in northeast areas of the Region by Federal or cooperating State personnel. Ohio set 12 traps, the greatest number placed in any one state in the Region. Other areas having traps were Michigan, Indiana, Wisconsin, and Minnesota

Both trapping and visual scouting will be continued in fiscal year 1964.

### GOLDEN NEMATODE

Intermittent surveys for this important pest of potatoes were made in Central Region states from 1949 to 1962. A total of 52,197 field, grader, and cull-pile samples was obtained in potato-growing areas. All were negative.

During fiscal year 1963 this survey was combined with the soybean cyst nematode survey. The method of obtaining and processing soil samples in these surveys is so similar that the two can be effectively accomplished together.

### GRASSHOPPERS

Cooperatively financed grasshopper control programs in the Central Region included four rangeland operations in North Dakota and South Dakota and 12 individual county-Federal roadside undertakings in North Dakota.

#### Rangeland

State	:	Area	:Total Acres Treated
North Dakota		Lostwood Wildlife Refuge	2,146
		Snake Creek National Refuge	<u>5,036</u>
Total	.	.	7,182
South Dakota		Red Canyon (Black Hills)	680
		Lower Brule	<u>2,220</u>
Total	.	.	2,900

Roadside

State	:	Area	:	Total Acres Treated
North Dakota		Benson County		2,867
		Bottineau County		11,398
		Divide County		935
		McHenry County		15,242
		McLean County		3,948
		Mountrail County		2,846
		Pierce County		3,920
		Renville County		3,180
		Rolette County		3,169
		Stark County		214
		Ward County		8,952
		Wells County		<u>4,471</u>
Total	.	.	.	61,142



Cornfield showing typical severe grasshopper damage. Where infestation is heavy, 'hoppers can move from field to field and, in a short time, completely defoliate the corn.



Grasshopper damage to cultivated crops was largely limited to local areas in North and South Dakota, Wisconsin, Minnesota, Nebraska, Iowa, and Illinois.

Farmers recognize grasshopper control as a necessary farm practice, and when these pests become a threat to crops, appropriate control action usually follows. Under this arrangement, grasshopper damage to crops throughout the Region is kept low. Plant Pest Control personnel assist with surveys and furnish technical assistance where needed in the crop areas.

#### GYPSY MOTH

Trapping operations by states included:

Illinois	72
Indiana	94
Kentucky	117
Michigan	4,055
Minnesota	38
Ohio	268
Wisconsin	<u>235</u>
Total	4,879

During December, Christmas trees from Ontario, Canada, and Wautoma, Wisconsin, were checked by PPC inspectors in Ohio. The result of the above trapping and observation effort was negative.

Michigan is the only State in the Central Region in which the gypsy moth has been found to date. The last moth to be trapped in that State was taken in late summer of 1961, and surveyors have observed no egg clusters since then. The infested area, involving 4,320 acres, was treated during May of 1962.

#### JAPANESE BEETLE

Activities in the Japanese beetle program were increased considerably during the past year. This was particularly true with respect to the regulatory and control activities. Regulated areas were extended in the States of Kentucky and Ohio, and the entire State of Indiana was placed under regulation. Aerial treatment for beetle control was applied on extensive acreages in Berrien, Lenawee, and Monroe Counties, Michigan. Foliage and ground treatment was made of smaller isolated areas throughout the Region. Some community treatment was supervised by PPC personnel in the Cincinnati area.

Due to the heavy beetle population, the Cleveland-Hopkins Airport (Ohio) was declared hazardous on July 9. All planes originating or stopping at this point and departing for unregulated destinations were treated. Mist blowers were in constant use to keep the beetle population down during the entire hazard period. Subsequently, the airport and adjacent NASA terminal consisting of 583 acres were soil treated. The chemical was purchased by the cooperating agencies and the responsibility for application was assumed by the PPC Division.

Beetle populations were also heavy in the Sheldon-Kentland area of Illinois and Indiana, and in the South Bend-Mishawaka, Indiana, area. Here mist blowers were used principally along the main roads and highways to reduce spread by vehicles.

The quarantine extending the regulated areas in Kentucky, Ohio, and Indiana became effective September 1. In anticipation of the quarantine action, the nurserymen were advised well in advance of the effective date. Many of the nurseries were in a certified status because of earlier inspections and treatments required under the State regulations. Consequently, the regulatory program got underway with a minimum of confusion, aided considerably by the attitude and cooperation of the nursery industry.

During the year, about 85,000 grubs were collected by Ohio PPC personnel and delivered to Dr. Harlow H. Hall of the Northern Utilization and Research Development Laboratory, Peoria, Illinois, for use in his research work on milky disease.

Japanese Beetle Control - Accomplishments, F.Y. 1963

State	: Acres : Surveyed	: No. Traps: : Installed	Acres Infested	: Acres : Ground	Treated : Air
Illinois	0	8,606	23,422	5,470	0
Indiana	0	434	0	431	0
Iowa	0	3,629	10	25	0
Kansas	0	403	0	30	0
Kentucky	1,571	1,577	3,636	630	0
Michigan	0	20,189	85,600	4,109	81,491
Minnesota	0	1,096	0	50	0
Missouri	0	7,036	960	3,013	0
Nebraska	0	95	0	0	0
North Dakota	0	64	0	0	0
Ohio	10,605	5,083	445,354	2,787	0
South Dakota	0	140	0	0	0
Wisconsin	0	1,184	0	0	0
Totals	12,176	49,536	558,982	16,545	81,491

### KHAPRA BEETLE

Limited inspections were made in all states of the Central Plant Pest Control Region during fiscal year 1963. The total of 306 properties inspected included leads that had been received from industry and other appropriate sources. Two processing plants and one truck in Ohio were certified under regulatory requirements.

A 10-day intensive survey was conducted in the grain elevators at Wichita, Kansas, during October-November 1962, as a result of information received from the Western Region regarding possible presence of Trogoderma granarium in grain shipments. Many specimens were collected, but none proved to be positive finds.

Between August 3, 1962, and February 1963, alerts were received from the Plant Quarantine Division relative to certain materials distributed in parts of the Region being contaminated with khapra beetle. In each case cargo from foreign ships were involved.

The first was SS Maturata, which put into port at New Orleans. The suspected material was jute and cotton bagging materials, some of which was scheduled for St. Louis, Missouri, and Des Moines, Iowa. The second was the British SS Aristides, which docked at Detroit, Michigan. Trogoderma granarium had been found in grain residues present in five holds of the ship. This required proper fumigation, which was done under the supervision of Plant Quarantine. SS Jalandra was the third ship. This vessel docked at New York. The product which merited concern was black pepper consigned to companies in Cincinnati, Ohio, and Winona, Minnesota.

All inspections made of material and products delivered into the Central Region were negative. No khapra beetle infestations have been found in the Central Region to date.

### PEACH MOSAIC

Peach mosaic inspections made of 334,984 trees in Stark's Nurseries at Louisiana, Missouri, were negative. Annual inspections of nurseries have been made for many years in this area and no peach mosaic has ever been found.

### PHONY PEACH

Peach orchards in one county in Kentucky and 11 counties in Missouri were surveyed for the presence of phony peach disease. Of the several thousand peach trees examined, only two were found to be diseased. These were in Missouri orchards and were removed by the owners.

Surveys for phony peach have been made periodically in the Region since 1931 in parts of the Illinois, Indiana, Kentucky, and Missouri area. Jackson, Massac, Pulaski, and Union Counties, Illinois, and Dunklin County, Missouri, were under regulation by the respective states.

Accomplishments - Fiscal Year 1963

State	: Number	Surveyed	: Number	: Prop-	:	:
	: Properties	: Acres	: Examined	: Infested	: Infested	: Trees
Kentucky	5	-	12,140	0	0	0
Missouri	<u>76</u>	<u>-</u>	<u>101,215</u>	<u>2</u>	<u>2</u>	<u>2</u>
Totals	81	-	113,355	2	2	2

PINK BOLLWORM

The pink bollworm is a constant threat to cotton-producing areas in southeastern Missouri and western Kentucky. It is not known to be present in the Central Region.

The Missouri State Department of Agriculture and the Plant Pest Control Division cooperate in making surveys and checks for this pest in the State. Two thousand one hundred seventeen bushels of gin trash were inspected. In addition, several cotton gins were inspected in southwestern Kentucky by Plant Pest Control personnel in that area.

Numerous shipments of cotton products from the South to various points in all states in the Central Region were checked as a regulatory measure. Supervisors checking the shipments ascertained that they were properly disposed of and not reshipped out of the Region to southern destinations.

As was the case in fiscal year 1962, two uncertified carloads of cotton linters were received at Cairo, Illinois, for storage. These were fumigated under the direction of Plant Pest Control personnel.



Pink Bollworm - Accomplishments Fiscal Year 1963

State	: <u>Surveyed</u> :		<u>Inspection for Certification</u>		
	: Prop- : erties	: Bushels : Gin Trash	: Prop- : erties	: Processing : Plants	: Other
Illinois	-	-	2	9	-
Kansas	-	-	63	63	-
Kentucky	-	-	-	3	-
Michigan	-	-	14	-	120
Minnesota	-	-	11	18	-
Missouri	33	2,117	-	14	-
Nebraska	-	-	16	16	-
North Dakota	-	-	-	2	-
Ohio	-	-	-	5	4
South Dakota	-	-	-	1	-
Wisconsin	-	-	-	19	-
Totals	33	2,117	106	150	124

SOYBEAN CYST NEMATODE

Intensive surveys were continued in the known infested soybean-growing areas of the Region. Random sampling was conducted in the northern states, where the pest is not known to occur. Aerial observations were made by State regulatory officials in Indiana, and suspect fields were recorded and soil samples collected for examination. In these outlying states, all specimens were negative.

By mid-June, evidence of soybean cyst nematode damage was observed in the southeastern counties of Missouri. There, observations resulted in locating many newly infested properties within the regulated areas. In a number of cases, heavily damaged fields were disked and replanted. Damage to soybean fields was also observed in Kentucky in some fields in Illinois.

Infested soybean fields were found in two additional counties during the year--Alexander County, Illinois, and Hickman County, Kentucky. With the next revision of the quarantine, it is anticipated that recommendations will be made to extend the regulated area in Missouri and to place under regulation certain areas in Pulaski and Alexander Counties in Illinois. The Illinois infestations are currently under a premise regulation.

Regulatory activities were increased during the year because of the heavy movement of farm machinery to auction sales. Fumigation of cotton pickers in June was unusually heavy. Fifty units, most of them moving to Texas, were fumigated in Missouri alone during the month.

Recognizing that farm machinery and construction equipment are one of the most hazardous means of spreading the cyst, the Missouri Highway Commission included the following statement in their specifications for road construction contracts: "The contractor's attention is directed to the regulations relative to the movement of construction equipment within the regulated area for the control of the soybean cyst nematode issued by the PPC Division, U. S. Department of Agriculture."

Announcement of a new strain of yellow-seeded bean resistant to the soybean cyst nematode was made by researchers of the University of Missouri in May. This is an outstanding achievement and might eventually be the solution to the current soybean cyst nematode problem. It is reported that it may be at least three years before sufficient resistant seed varieties will be available to growers.

Procedures are being developed to wash 100 carloads of sugar beets grown in the soybean cyst nematode regulated area in Missouri in preparation for movement to a processing plant in Colorado. Detailed arrangements for handling the beets at origin, en route, and at destination have been worked out with all the agencies concerned. This project, sponsored by the Tri-County Sugar Beet Growers Association and the State of Missouri, is experimental. The sponsoring group hopes this pilot test will eventually result in the establishment of a sugar-beet-processing plant in the area.

Soybean Cyst Nematode Control - Accomplishments Fiscal Year 1963

State	Prop- erties : Surveyed	: Acres : Surveyed	: No. of : Infested : Props.	: No. of : Infested : Acres	: Commodities Treated : Fumigated	: Other
Illinois	1,112	46,880	2	90	0	86
Indiana	0	728,960	-	00	0	0
Iowa	455	13,003	0	0	0	0
Kansas	25	662		0	0	0
Kentucky	414	25,101	5	194	5	263
Minnesota	295	7,071	0	0	0	0
Missouri	2,067	89,268	313	10,164	249	590
Nebraska	147	2,703	0	0	0	0
Wisconsin	18	242	0	0	0	0
Totals	4,533	913,890	320	10,448	254	939

Soybean Cyst Nematode Infestations - Cumulative Through June 30, 1963

State	County	No. of	Acres	Commodities Treated	
		Properties:		Fumigated	Other
		Infested	Infested		
Illinois	Pulaski	8	265	1	92
Kentucky	Ballard	2	75	116	635
	Fulton	47	3,910		
	Hickman	5	194		
Missouri	Dunklin	111	4,026	362	1,151
	Mississippi	7	312		
	New Madrid	185	6,700		
	Pemiscot	392	14,579		
	Scott	3	180		
	Stoddard	<u>18</u>	<u>1,191</u>	—	—
Totals		778	31,432	479	1,878



Washing farm equipment is required under the soybean cyst nematode quarantine.

# WHITE-FRINGED BEETLE



WFB Grub

A small infestation of white-fringed beetles was detected by survey in Hazel, Galloway County, Kentucky, July 26 - August 1, 1962. This was the second find of this insect in this State to date. The first location was in Fulton (Fulton County) on September 23, 1960. Under cooperative Federal-State action the Hazel area, involving 15 acres, was treated with granular dieldrin. The Fulton infestation was handled in a similar manner during the fall of 1960.

During the fiscal year under review, intensive surveys by PPC and State personnel have been conducted in southwest, central, northwest, and western Kentucky, southern Illinois, and southeastern Missouri. Neither grubs nor adults were found.

At this date no known infestations are present anywhere in the Central Region.

Appropriate surveys in the states listed above will be continued during optimum insect development and weather conditions.



WFB - Accomplishments Fiscal Year 1963

State	: Number : of : Counties	: No. of : Properties : Surveyed	: No. of : Properties : Infested	: No. of : Acres : Infested	: No. Acres : Ground- : Treated
Illinois	3	140	0	0	0
Kentucky	13	6,017	1	1	20
Missouri	<u>10</u>	<u>373</u>	<u>0</u>	<u>0</u>	<u>0</u>
Totals	26	6,530	1	1	20

ASSOCIATED ACTIVITIES



Japanese beetle exhibit used at Kansas City Flower and Garden show, March 2-10, 1963. Note Japanese beetle trap on each side of exhibit.

# Summary of Associated Activities - Fiscal Year 1963

State	Public Meetings: Attended:	P r e s e n t a t i o n s					Feature: & News: Stories:	Extent These Aids Were Used			Special Reports	
		Talks	Slides	Films	Radio	TV		Ex- hibits:	Bul- letins:	Infes. Maps:		
Illinois	6	6	20	3	4	0	145	1	0	2,290	160	21,500
Indiana	9	27	22	10	1	1	55	107	151	2,775	550	33,192
Iowa	2	2	2	1	0	1	27	0	500	5,450	4	0
Kansas	72	73	71	13	0	0	14	1	1,405	4,700	675	225
Kentucky	18	0	0	7	0	0	0	0	1,900	400	450	0
Michigan	27	154	97	40	14	8	64	0	10,000	600	0	60,600
Mpls. Office	0	7	0	9	0	0	0	5	150	0	0	0
Minnesota	54	54	31	15	8	0	6	2	3,343	426	168	0
Missouri	5	5	2	0	0	0	13	1	530	4,145	646	6,050
Nebraska	29	28	11	12	0	1	13	0	1,550	500	270	1
North Dakota	23	18	18	2	0	1	5	5	600	250	650	0
Ohio	14	17	6	9	4	0	2	3	10,550	0	4,088	3,572
South Dakota	19	15	15	1	0	0	0	2	900	300	570	0
Wisconsin	<u>1</u>	<u>1</u>	<u>1</u>	<u>4</u>	<u>99</u>	<u>3</u>	<u>1</u>	<u>0</u>	<u>1,460</u>	<u>350</u>	<u>185</u>	<u>159</u>
Totals	279	407	296	126	130	15	345	127	33,039	22,186	8,416	125,299









(\*--\*)

P L A N T P E S T C O N T R O L

COOPERATIVE PROGRAMS

EASTERN REGION

FISCAL YEAR  
1963

November 1963  
Moorestown, New Jersey

U. S. Department of Agriculture  
Agricultural Research Service  
Plant Pest Control Division

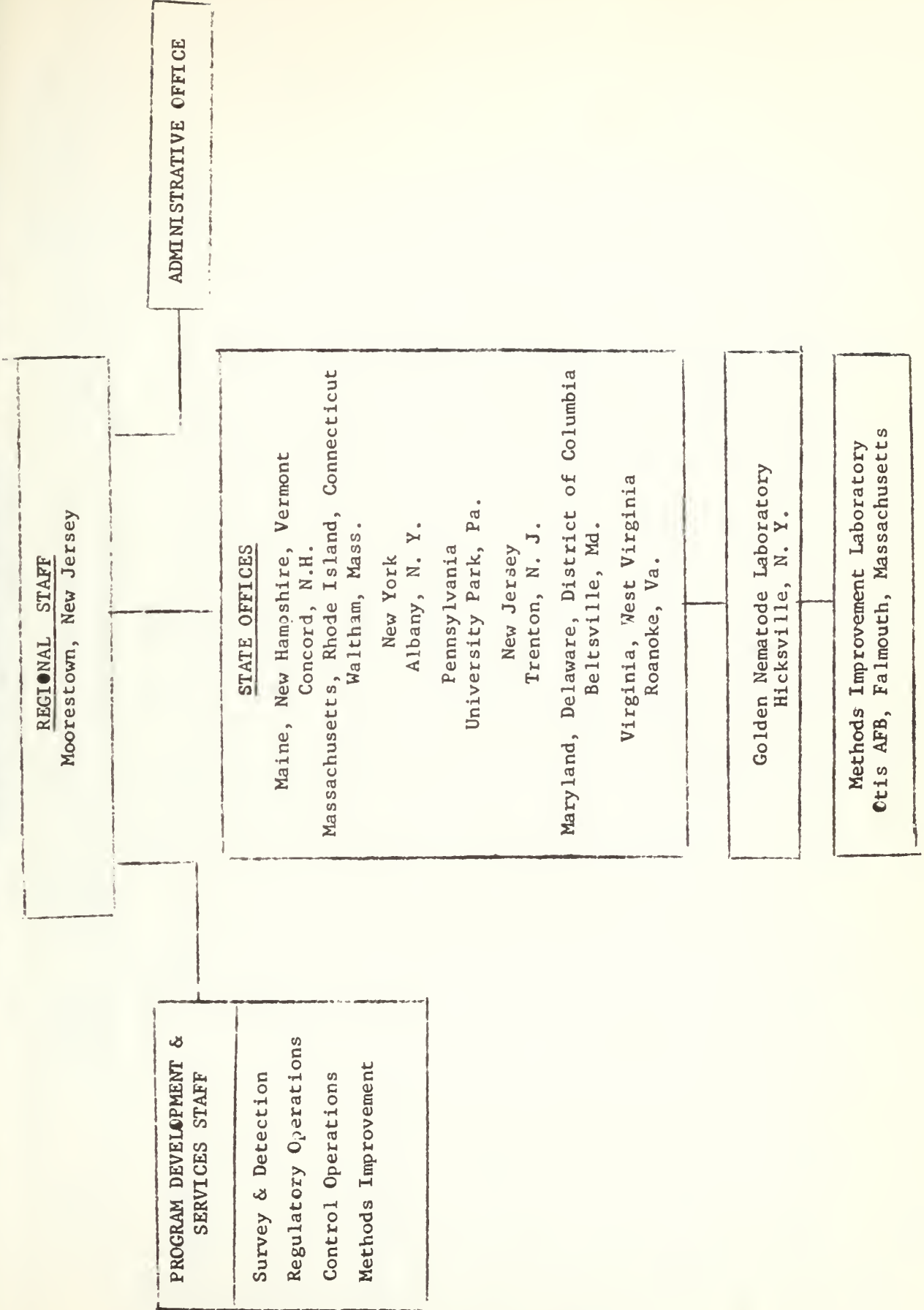


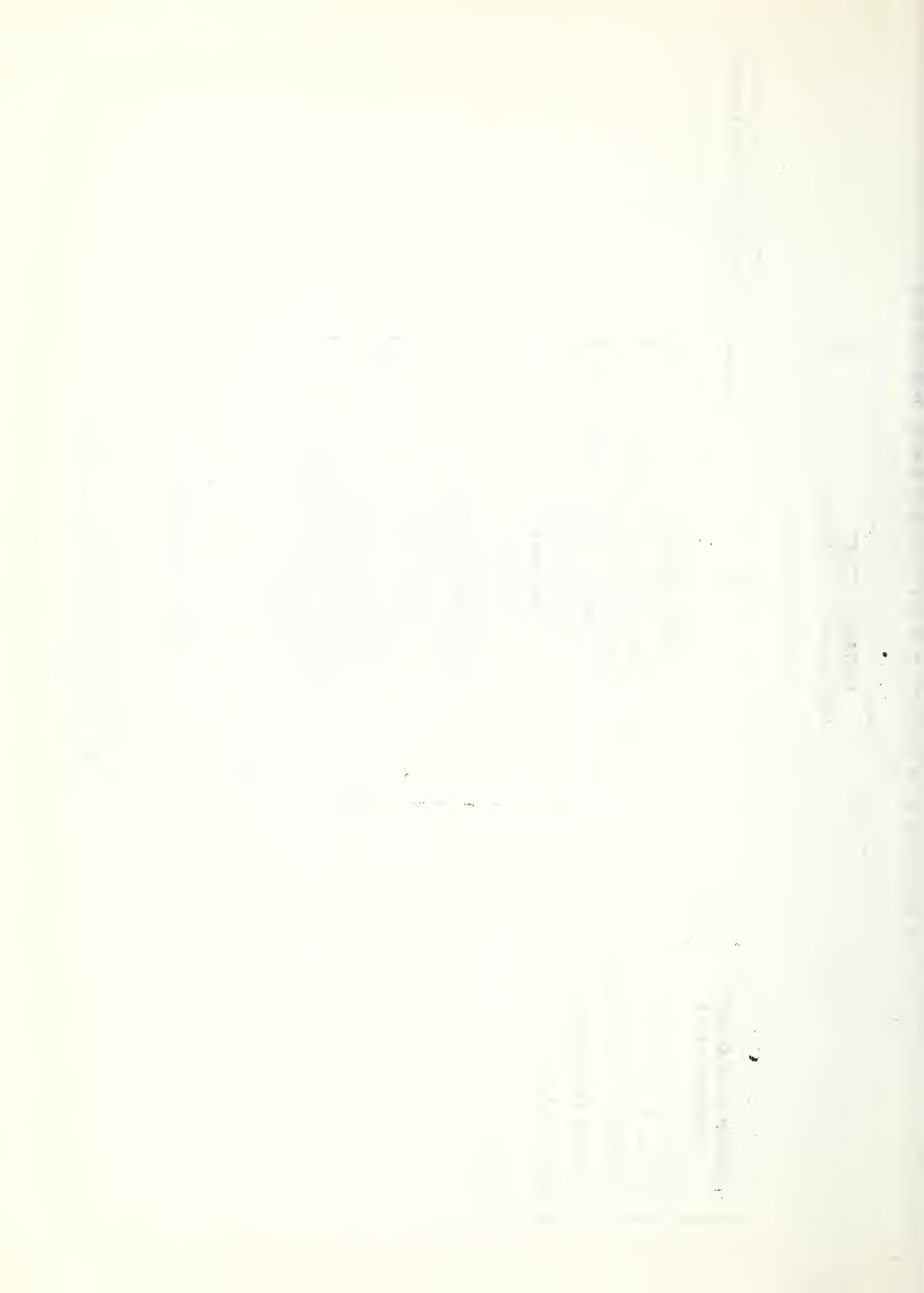
# TABLE OF CONTENTS

	<u>Page</u>
Chart - Eastern Plant Pest Control Region . . . .	1
Chart - Summary of Associated Activities . . . .	2
Cooperative Federal-State Programs	
Barberry Eradication . . . . .	3
Brown-Tail Moth . . . . .	4
Cooperative Economic Insect Survey . . . . .	5
European Chafer . . . . .	6
Golden Nematode . . . . .	7
Gypsy Moth . . . . .	8
Japanese Beetle . . . . .	9
Khapra Beetle . . . . .	10
Soybean Cyst Nematode. . . . .	11
White-Fringed Beetle . . . . .	12
Witchweed . . . . .	13
Methods Improvement . . . . .	14-15





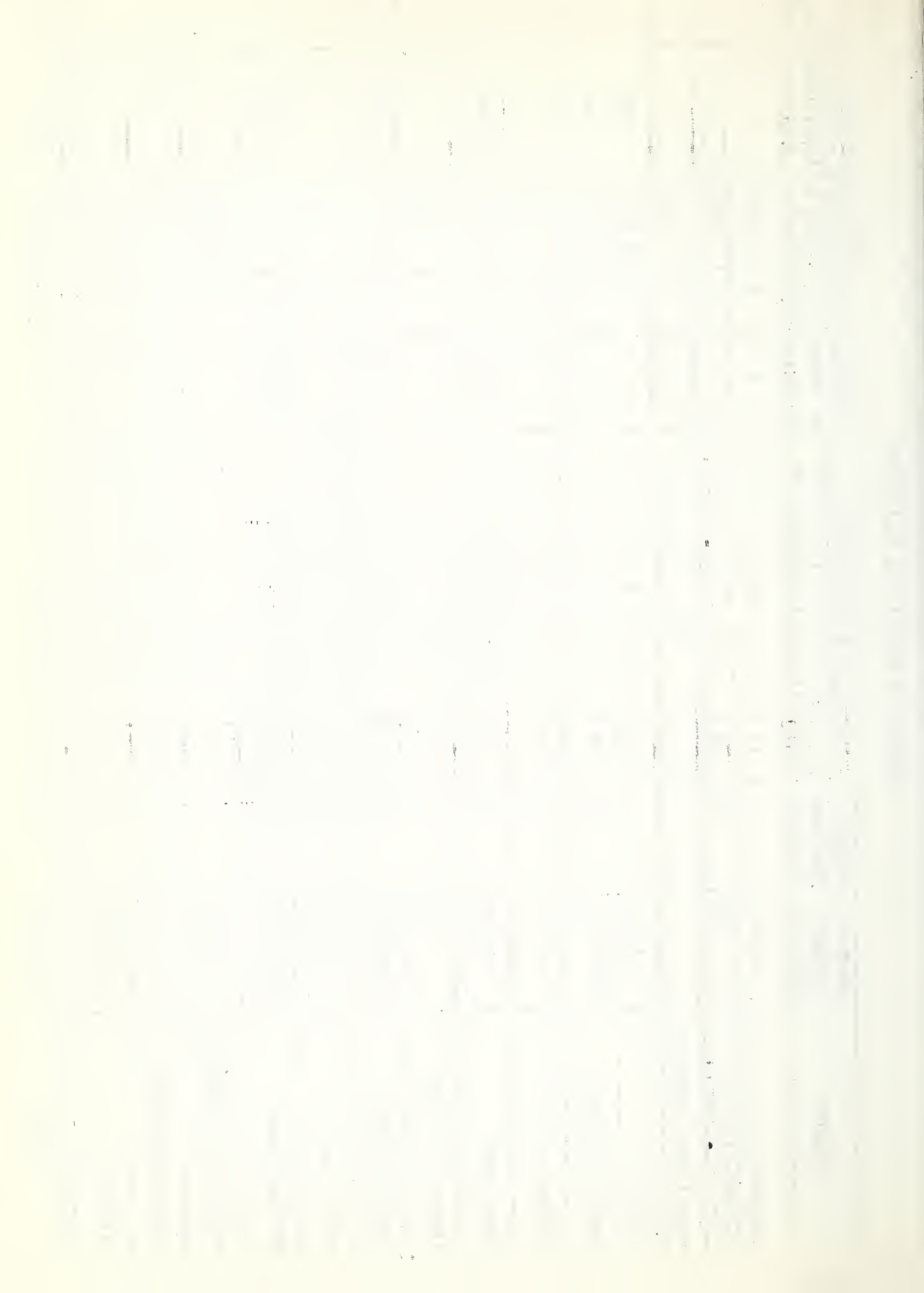




Fiscal Year 1963

Program	Number		P r e s e n t a t i o n s										F e a t u r e										E x t e n t U s e d									
	: Persons		: Meetings		: Talks		: Slides		: Films		: Radio		: TV		: & News		: Exhi-		: Bilt		: & Infest		: Maps		: Spcl.							
	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended	: Attending	: Attended						
Barberry	69,192	15	17	13	19	2	8	7	1,575																							
Brown-Tail Moth	99		1																													
Cereal Leaf Beetle																																
C.E.I.S.	53,718		12	27	4	1		4	2,830	724																						
European Chafer	1,158,910	5	10	9	2		2	9	5,095	30																						
Golden Nematode	28,390	5	7	6	1	1		1	379																							
Gypsy Moth	64,676	7	36	15	49	1	23	11	2,867	2,689																						
Imported Fire Ant	80		1	1					42																							
Japanese Beetle	626,698	10	13	9	36	1	2	6	7,447	1,739	1																					
Khapra Beetle	2,150	5	7	7				2	60																							
PPC Activities	1,154,741	66	81	78	62		10	16	9,892	234	5																					
Soybean Cyst Nematode	28,080		1	1				1	1,255																							
White-Fringed Beetle	145,050		1	1				3	2,160																							
Witchweed	120,303	5	6	6	6	6		2	4,452																							
TOTAL	3,452,087	118	193	173	179	1	46	62	38,305	5,413	6																					





Fiscal Year 1963

The cooperative Federal-State eradication program was continued in Pennsylvania, Virginia and West Virginia. The plan of work was the same as during the past several years, with first attention being given to rework requirements. It was also possible to extend the areas of initial work into several counties. Nearly six and one-half million rust-spreading barberry bushes were destroyed on 1,071 of the 2,241 properties surveyed, involving 1,782 square miles. A total of 160 previously infested properties were relegated to the inactive status and 1,116 square miles of territory were placed on maintenance in the three eradication states.

Results of continued and persistent work and rework in Pennsylvania are noted in the continued reduction in numbers of barberries found on properties once heavily infested and in the continued reduction in average stem rust infection and resulting crop losses.

During the rust season, stem rust losses in Pennsylvania were estimated as: wheat, 2.5%; oats, trace; barley, trace; and rye, trace. In the Virginias, stem rust on small grain was reported to be light.

During the year, nurseries and dealer establishments were inspected and authorized to move regulated products interstate under provisions of Quarantine No. 38. Regulatory activities also included inspections of barberry plants in postentry status.

Selected herbicides were field tested in plots under the direction of the Methods Improvement Section.



## Fiscal Year 1963

Extensive Federal-State scouting surveys were conducted in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Black light traps were utilized at several locations in New Hampshire and Massachusetts as a supplement to visual scouting. Survey efforts were concentrated in areas having a record of previous infestations.

The surveys disclosed one light infestation at Wells, Maine and four scattered light infestations in the southern section of New Hampshire. In Massachusetts, a single web was found and clipped on Deer Island (Boston Harbor) and a small infestation was found at Plum Island. On Cape Cod, an extensive infestation was discovered in the Truro-Providence area and moderate infestations were found at Sandy Neck and at Dennis. Surveys in the other states were negative.

The infestation at Wells, Maine was treated with DDT and Sevin, applied by ground equipment. In New Hampshire, State personnel cut and burned winter webs as they were found. In addition, one of the infestations in New Hampshire was treated with Sevin as webs in tall trees were not clipped. At the Dennis infestation, webs were cut and burned by the property owner.





## Fiscal Year 1963

Increased emphasis was placed on cooperative economic insect survey activities during the year. Close working relations were maintained with survey coordinators in all states. Six workshops were held to encourage greater participation on the cooperative survey programs. In addition, a special short course, "RECOGNITION OF COMMON INSECTS," was conducted by the Entomology Department of Rutgers University at the request and on behalf of the PPC Division and the New Jersey Division of Plant Industry. This one-week course was attended by 21 Eastern Region PPC Inspectors and 10 State Inspectors.

In consideration of the presence of winter moth, Operophtera brumata, in Nova Scotia, a trapping survey for this pest, initiated in 1961 was continued in 1962. Traps were operated in cooperation with the States of Maine and New Hampshire during the month of November. Seventeen traps were employed to survey 30 sites in six coastal counties in Maine and one trap was used in New Hampshire. Results were negative.

The fruit fly trapping program initiated in 1961 was expanded in all states in the summer of 1962. Sticky board traps were used for the first time, in addition to McPhail and Steiner traps. As a result of this survey, ten different fruit fly species were trapped, one of which, Rhagoletotrypeta, sp. represented a species considered new to the North American continent. This species was caught at two locations in Camden, New Jersey.

Black light traps were operated in varying degrees in five Eastern Region states and the District of Columbia. Eleven traps were utilized at 14 important port of entry sites.

Observations and sweepings for cereal leaf beetle were made at selected sites throughout the Region where host products were received from infested states. A device for screening hay and straw samples collected at race tracks during the winter months was developed by PPC personnel at Elkridge, Maryland.



## Fiscal Year 1963

During the summer of 1962, chemical and blacklight traps were used more extensively in detection and delimiting surveys than in previous years. A total of 1,300 traps were operated at some 2,700 sites. Visual inspections were utilized principally as a means of quickly delimiting areas of infestation initially detected by traps. Surveys were conducted in all states within the Region with the exception of Virginia.

The 1962 summer surveys disclosed continued local spread of the chafer at several locations adjacent to known infestations in New York, New Jersey and Connecticut. In New York, infestations were found for the first time in the counties of Albany, Herkimer, Schuyler and Queens; and, a new spot infestation was detected in Oswego County, in which a previous infestation at Minetto had been eradicated. Several of these new infestations involved interchanges on the New York Thruway. A new area of infestation was also discovered in Connecticut, approximately one mile northeast of the original infestation found in 1951. For the third consecutive year no chafers were detected in the Capon Bridge, West Virginia area.

Surveys in late June 1963 resulted in the discovery of the first chafer infestation in Pennsylvania - at Erie. A chafer was also taken for the first time in Hartford County, Connecticut, in the town of Berlin. Extensions of infestation were noted in New Jersey and Staten Island, New York.

Effective February 16, 1963, administrative instructions designating areas regulated under Federal Quarantine No. 77 were revised. The revision removed from regulation the district of Bloomery and the town of Capon Bridge, Hampshire County, West Virginia. It added to the New York regulated area additional towns and cities in the counties of Erie, Niagara and Onondaga; and, certain towns and cities in the newly infested counties of Cayuga, Chenango, Herkimer, Oneida and Schuyler. Also, the entire county of Richmond (Staten Island), New York and additional territory in Connecticut (New Haven and Hartford Counties).

Cooperative regulatory activities were performed throughout the year to prevent local and interstate dissemination of the insect through commerce.

Surface soil treatments with residual insecticides were applied to 7/8 acres in New York and 2,898 acres in New Jersey. Treatments in New York involved several infested sites along the New York Thruway, four locations on Staten Island and one in Queens. Acreage treated in New Jersey included all infestations found during the 1962 summer survey season.

Funds available for the conduct of this program continued to be inadequate.





## Fiscal Year 1963

Approximately 36,285 soil samples, representing some 38,544 acres were collected from 1,326 properties (fields and grader stations) in the states of New York, Maine, Maryland, New Jersey and Vermont. More than 32,000 of the samples were collected on Long Island.

Surveys conducted outside Long Island, New York, continued to be negative. Intensive surveys on Long Island in the fall of 1962 revealed infestation on six fields in Suffolk County, aggregating 305 acres. Since the beginning of the program in 1941 a total of 16,238 acres have been recorded as infested on Long Island. Of this total, some 10,000 acres have been taken over for real estate development and 2,517 acres have been treated. Approximately 3,500 acres of agricultural land remain in the infested category.

The eradication program on Long Island initiated in 1960 progressed according to schedule, with 23 fields totalling 778 acres being treated in fiscal year 1963. Included were two fields previously treated from which viable cysts were recovered on post-treatment surveys. One field of 14.45 acres originally treated in 1960 from which three viable cysts were recovered by post-crop survey in 1961, was entirely retreated. In the other field, 48.40 acres, post-fumigation surveys resulted in the recovery of a single viable cyst and a ten acre section of the field considered infested was retreated.

The Division continued to cooperate with the New York State Department of Agriculture and Markets in the enforcement of State quarantine regulations.



## Fiscal Year 1963

More than 37,000 traps were operated for detection or delimiting purposes in Pennsylvania, New Jersey, New York, and the non-regulated sections of northern New England. Approximately 1,600 additional traps were placed at selected locations in Delaware, Maryland, Virginia, and West Virginia. The paper (Johnson) trap baited with synthetic gyplure was used exclusively. Limited visual scouting for egg clusters was conducted at selected positive trap sites.

Trapping and scouting surveys revealed infestations within the suppressive area and at several locations in non-regulated sections of New York, New Jersey, and Pennsylvania. In New York, most of the 137 positive trap sites were concentrated in the southeastern portion of the suppressive area. Scattered trap recoveries were made in the central and northern sections of the state, including a location in Jefferson County, some 80 miles west of the regulated area. In New Jersey, 90 traps recovered moths in five northern counties; and nine traps caught moths in two adjacent counties in northeastern Pennsylvania. Four moths were trapped in non-regulated territory in Vermont. Surveys in all other states in this Region were negative.

Cooperative Federal/State spraying programs resulted in the treatment of 134,219 acres by aircraft and 266 acres by ground equipment. All known infestations in Pennsylvania and New Jersey, six spray blocks - 10,042 acres and 34 blocks - 74,490 acres respectively, were treated with Sevin or DDT at the rate of one pound per acre by aircraft. In New York, 61 separate blocks were originally scheduled for treatment with Sevin. However, it became necessary to revise plans at a late date upon advice from the State of inability to arrange removal of bees from proposed treatment blocks in Orange and Rockland Counties. Consequently, the work plan was amended to provide for use of DDT at a 1/2 pound per acre dosage in blocks or parts of blocks devoid of residue problems. This change did not overcome the bee-dairy problem completely in two blocks in Orange County and the State requested that they be eliminated from the treatment schedule. Also, nine properties in three separate spray blocks in Rockland County were not treated following decision by the State to respect objections voiced by owners. As a result, 59 spray blocks aggregating 49,687 acres were aerially treated with Sevin and DDT. Sevin was applied on 39,946 acres at the rate of one pound per acre and 9,741 acres were treated with DDT at the 1/2 pound per acre dosage. An additional 266 acres, principally in suburban areas of Queens, Nassau, Westchester and Rockland Counties, were treated with Sevin or DDT, applied by ground equipment.

State agencies in seven states treated a total of 315,440 acres in the generally infested area to suppress outbreak populations and prevent defoliation. Of this total, DDT was used on 297,290 acres and Sevin on 18,150 acres.

Surveys in 1963 recorded approximately 308,000 acres of defoliation in the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and New York, as compared with 67,000 acres reported defoliated the previous year. The latter figure does not include acreage defoliated in Connecticut.

Regulatory services were provided throughout the year. This phase of the program involved field inspections of nearly 50,000 acres of nursery and other premises, 6,300 inspections of processing, industry and shipping sites and the certification of 400,300 commodity units. Nursery establishments applied control treatments on 2,000 acres of growing plots and borders to maintain certification status.



## Fiscal Year 1963

Extensive trapping surveys in 1962 in northern sections of Maine, New Hampshire and Vermont revealed several areas of infestation in the non-regulated part of Vermont and minor extensions of infestation in non-regulated territory in Maine.

Administrative Instructions designating regulated areas, revised effective September 21, 1962, placed the entire states of New York and New Hampshire under regulation and extended regulations to additional areas in Maine and Vermont. The city of Brewer in Penobscot County, Maine was removed from Federal regulations. It remains in regulated status under State quarantine. A second revision during the fiscal year, effective May 1, 1963, placed the entire state of Vermont under regulation and extended the regulated areas in Maine. Currently, all territory in this Region is under regulation with the exception of a large part of Maine.

Regulatory services were provided throughout the year to more than 1,000 establishments shipping regulated products. During the adult season regulatory activities related to 45 military and commercial airfields in 11 states and the District of Columbia where some degree of pest risk might develop. Beetle populations were relatively light, especially at fields where soil treatments had been applied in recent years and in drought areas. Cooperative suppressive foliar treatments, involving a total of more than 18,000 gallons of spray (12,000 DDT and 6,000 Sevin) were applied one or more times at each of these 45 fields. Sevin proved to be very effective. Hazardous adult beetle conditions associated with movement of farm products was limited to a few locations in the Delaware-Maryland area, and in six southwestern counties of Virginia. Foliage treatments were applied by the state of Virginia around heavily infested field sites, loading platforms, etc. Also in Virginia, green beans were fumigated and cabbage was certified on the basis of negative field inspections for movement to suppressive areas in Tennessee.

To reduce beetle populations and spread hazards at airfields, residual soil treatments were applied cooperatively at seven military and five commercial fields, totalling 8,033 acres. An additional 1,275 acres were treated at Fort Dix adjacent to treated areas at McGuire AFB.





KHAPRA BEETLE

Fiscal Year 1963

Two-hundred and eighty-seven properties were inspected in this Region in the states of New Jersey, Pennsylvania, Maryland, Delaware, Virginia, and West Virginia. In general, inspections were restricted to (1) establishments not previously inspected, (2) reinspections of establishments having a history of receiving infested products, and (3) establishments that have received products from foreign sources or from regulated areas in this country. All inspections proved negative.

At the request of the Plant Quarantine Division approved commodity treatments were made in New York, New Jersey, Pennsylvania, and Virginia. These involved 62 commodity lots which were off-loaded from infested ships and moved to inland destinations. In all cases it was necessary to trace shipments, place hold orders, and have the receivers apply authorized regulatory treatments.



SOYBEAN CYST NEMATODE

Fiscal Year 1963

Cooperative Federal-State soil sampling surveys for detection and delimiting purposes were conducted during the fiscal year in Virginia in the counties of Greenville, Isle of Wight, Nansemond, Norfolk, Princess Anne, Southampton, Surry and Sussex. In these counties, 16,130 soil samples were collected on 1,475 properties involving 11,259 acres of crop land. Extensions of infestation were found on ten properties in Nansemond, Isle of Wight and Southampton Counties.

Detection surveys were also conducted at selected sites in the states of Maryland, Delaware and New Jersey. A total of 3,281 soil samples was collected on 1,033 properties in the three states, with negative results.

At the close of the fiscal year, 301 properties were under Federal and/or State quarantine in parts of the three infested counties in Virginia. State and Federal regulatory measures were enforced to control movement of farm machinery, equipment, and other products and articles considered a spread hazard. Three thousand and forty-one commodity lots, including 10,000 units of farm and other machinery, 9,000 watermelons, and some 800 loads of peanuts were approved for movement from infested properties under certificates or limited permits. A total of 217 processing and industrial sites was inspected.

Tests were conducted on a three acre soybean cyst infested field near Holland, Virginia, to determine the feasibility of eradicating this pest by the application of DD fumigation treatments in the soil.

The Virginia Agricultural Experiment Station, Holland, Virginia, participated in cooperative studies and experiments, including the soil fumigation tests.





WHITE-FRINGED BEETLE

Fiscal Year 1963

Visual surveys for this pest were conducted in New Jersey, Delaware, Maryland, Virginia, West Virginia, and the District of Columbia. Principal emphasis was in Virginia and New Jersey where isolated infestations were found in 1960 and 1954, respectively and subsequently treated for eradication. Surveys in the areas of previous infestations in both states were negative. Late fall surveys in 1962 resulted in the discovery of a new infestation in Virginia, in the city of Norfolk. The first beetles were found on October 11 and subsequent delimiting surveys disclosed infestations at eight additional scattered locations in the city, including U. S. Army and U. S. Navy installations. This new infestation is some 60 miles east of the previous infestation in Greenville County.

Plans for the application of cooperative control treatments were completed early in January 1963 and the proposed program was announced by the Virginia Department of Agriculture. Treatments scheduled to start later in the month were delayed as local groups expressed opposition to the program and questioned the State's authority to apply treatments on private property. As a result, two open hearings were held by the Virginia Board of Agriculture, each followed by separate court actions seeking injunctions to stop the program. Finally, on March 15, 1963, treatment on public and private properties was started by the State and completed on May 14. In the meantime, treatments on military installations proceeded without incident and were completed by April 16. All known infestations were treated with formulations of granular dieldrin or dieldrin-fertilizer mixtures. Cooperating Federal, State, military and local agencies treated an aggregate of 2,149 acres.



## Fiscal Year 1963

Observations for witchweed, mostly incidental to other field activities, were made at 1,956 properties in eight states. Particular attention was directed to the most important corn producing areas in the southern section of the Region, nearest the known infestations in the Carolinas. Results were negative.



Fiscal Year 1963

Investigations conducted in Fiscal Year 1963 were aimed at further improving existing operational procedures and developing additional survey, regulatory, control and/or eradication methods. Several of the studies were conducted in cooperation with other Federal and State governmental agencies.

#### GYPSY MOTH

Field testing of the bacterial insecticide Bacillus thuringiensis was continued in order to evaluate the most promising commercial formulations available. Although superior in handling characteristics to earlier materials, these new formulations have failed to provide satisfactory control even with the addition of small concentrations of the gypsy moth polyhedral virus.

Indications are that more concentrated polyhedral virus sprays increase the incidence of disease to field treated populations. Studies currently in progress are aimed at determining optimum amounts required.

Field use of gyplure, other than for the annual survey trapping program, has been restricted until larger quantities can be produced. Laboratory synthesis and purification processes are underway to develop for mass production a highly purified gypsy moth sex attractant exhibiting excellent biological activity.

Utilizing the radiological sterilization technique preparations were completed for the initial field release of gamma irradiated male gypsy moth pupae.

An intensive laboratory screening program was started against all stages of the gypsy moth using the chemosterilants apholate, metepa, and tepa.

The insecticide, Zectran, was field tested at varying dosages, in comparison with oil and water-based Sevin sprays.

A repellent, MGK 874, was incorporated with the insecticide Sevin and field tested to determine its possibilities as a repellent to bees. No repellency was observed at either the 2 oz., 10 oz., or 20 oz. per acre application rates.

Various modifications of the Johnson gypsy moth trap were screened for efficiency. Traps fitted with lids containing bristle baffles and incorporating DDVP as a killing agent proved very effective.

Tricholyga segregata parasites from Spain were liberated in Connecticut. The egg parasite Ooencyrtus kuwanai, already established in New England, was introduced into an outlying New York infestation.

Saturation trapping of male moths was attempted in infested areas of Vermont and New York. In lightly infested areas this method appears to offer favorable competition to the limited female population.





BROWN TAIL MOTH

General purpose light traps were tested at Plum Island, Massachusetts to determine their effectiveness as a survey tool.

Ninety-eight compounds screened as possible attractants all proved negative.

Bacillus thuringiensis was screened at various concentrations to determine the relative susceptibility of young brown-tail moth larvae.

EUROPEAN CHAFER

Various black light trap designs were tested for comparison of effectiveness as a survey tool.

DDT, chlordane and Sevin were applied as foliage sprays for reduction of adult populations. Of the three, Sevin proved to be the most promising.

JAPANESE BEETLE

Sevin proved to be the most effective foliage spray in comparison tests with DDT.

SOYBEAN CYST NEMATODE

Field treatments were conducted with DD at a 20-inch depth followed by a normal 8-inch application. Good control, but not eradication, was achieved using a total dosage of 120 gallons of DD per acre.









MEXICO REGION

PLANT PEST CONTROL DIVISION - A.R.S. - U.S.D.A.

IN COOPERATION WITH

DEFENSA AGRICOLA - S.A.G.



ANNUAL REPORT

FISCAL YEAR 1963



PLANT PEST CONTROL  
COOPERATIVE PROGRAMS

MEXICO REGION

ANNUAL REPORT

FISCAL YEAR

1963

United States Department of Agriculture  
Agricultural Research Service  
Plant Pest Control Division



## PLANT PEST CONTROL COOPERATIVE PROGRAMS

In accordance with our Memorandum of Understanding with Mexico, the Plant Pest Control Division of the United States Department of Agriculture and the Defensa Agricola of the Mexico Department of Agriculture and Livestock cooperated in the preparation of work plans and the accomplishment of the Mexican Fruit Fly, Citrus Blackfly, Khapra Beetle, Mediterranean Fruit Fly, Pink Bollworm and Boll Weevil programs of the Mexico Region.





## I N D E X

	Page
MEXICAN FRUIT FLY	1
Table - MFF Survey and Detection	2
Table - MFF Regulatory Activity	3
Table - MFF Control Accomplishments	4
Map - MFF Program	5
CITRUS BLACKFLY	6-6a
Map -	7
I Biological Zone	
Table - CBF Survey and Detection	8
Table - CBF Colonization of Parasites	9
II Chemical Zone	
Table - CBF Survey and Detection	10
Table - CBF Regulatory Activity	11
Table - CBF Control Accomplishments	12
KHAPRA BEETLE	13
Table - KB Survey and Detection	14
Table - KB Regulatory Activity	15
Map - KB Program	16
MEDITERRANEAN FRUIT FLY	17
Table - MED Survey and Detection	18
Map - MED Program	19
PINK BOLLWORM	20
Table - PBW Survey and Detection	21
Table - PBW Regulatory Activity	22
Table - PBW Control Accomplishments	23
Map - PBW Program	24
INSPECTION STATIONS	25
Table - Cooperative Quarantine Inspection Summary	26
Map - Inspection Stations	27
BOLL WEEVIL	28
Table - BW Survey and Detection	29
Table - BW Debris Inspection	30
Table - BW Control Accomplishments	31
Map - BW Program	32



## MEXICAN FRUIT FLY

The Mexican fruit fly is not known to be established in Baja California or northern Sonora. Nor is it known to be established in the States of Arizona and California adjacent to the Mexican States of Baja California and Sonora. However, through the introduction of infested contraband host fruits into these two north Mexican states they are susceptible to an infestation of the Mexican fruit fly. As a matter of fact, Baja California has had a history of incipient infestations every year except 1958, since 1955. As these infestations have been found, they have resulted immediately in the initiation of an insecticide spray program aimed at eradication. In previous years eradication has resulted, and it is anticipated the eradication program being carried out at the end of this year will likewise be successful.

In Fiscal Year 1963 a total of 22 adult specimens of the Mexican fruit fly was trapped in Baja California. Twelve were trapped in period 7/6 - 8/22/62 and it was not until during June of 1963 that 10 flies were trapped as the result of the year around trapping operations.





MEXICAN FRUIT FLY  
SURVEY AND DETECTION

SUMMARY

F. Y. 1963

S T A T E	NUMBER PROPERTIES SURVEYED		N U M B E R O F			NUMBER INFESTED	
	Fruit Inspection	Trapped	Traps in Use	Trap Inspections	Positive Specimens	Properties	Acres
Baja California	43	901	1,324	78,320	22	21	97,695
Sonora	2	19	*40	1,582	0	0	0
T O T A L	50	920	1,864	79,902	22	21	97,695

\* 12 traps operated at Hermosillo, Sonora, F. Y. 1963 not included due to the fact that they were removed before December 1962 and were not reflected in PPC 7-27A end of Fiscal Year, June 30, 1963.



MEXICAN FRUIT FLY  
REGULATORY ACTIVITY

FUMIGATION

F. Y. 1963

SUMMARY

STATE	F R U I T F U M I G A T E D ( B O X E S )					
	Mangoes	Oranges	Sweet Limes	Plums	Guavas	Total
Sonora	53,804	53,927	770	3,513	6,484	118,578
Baja California	2,770	-	-	-	-	2,770
TOTAL	56,654	53,927	770	3,513	6,484	121,348



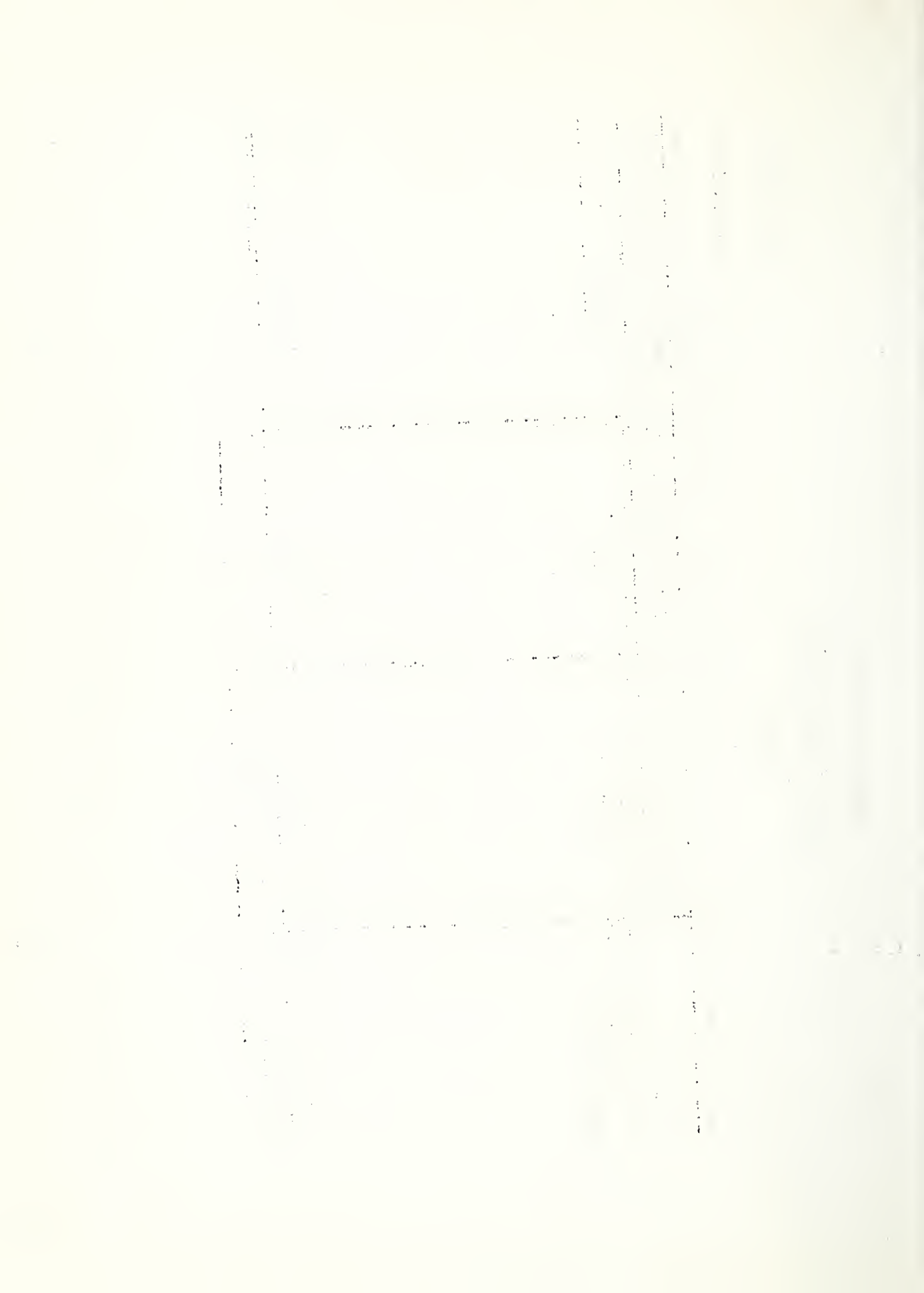
MEXICAN FRUIT FLY  
CONTROL ACCOMPLISHMENTS

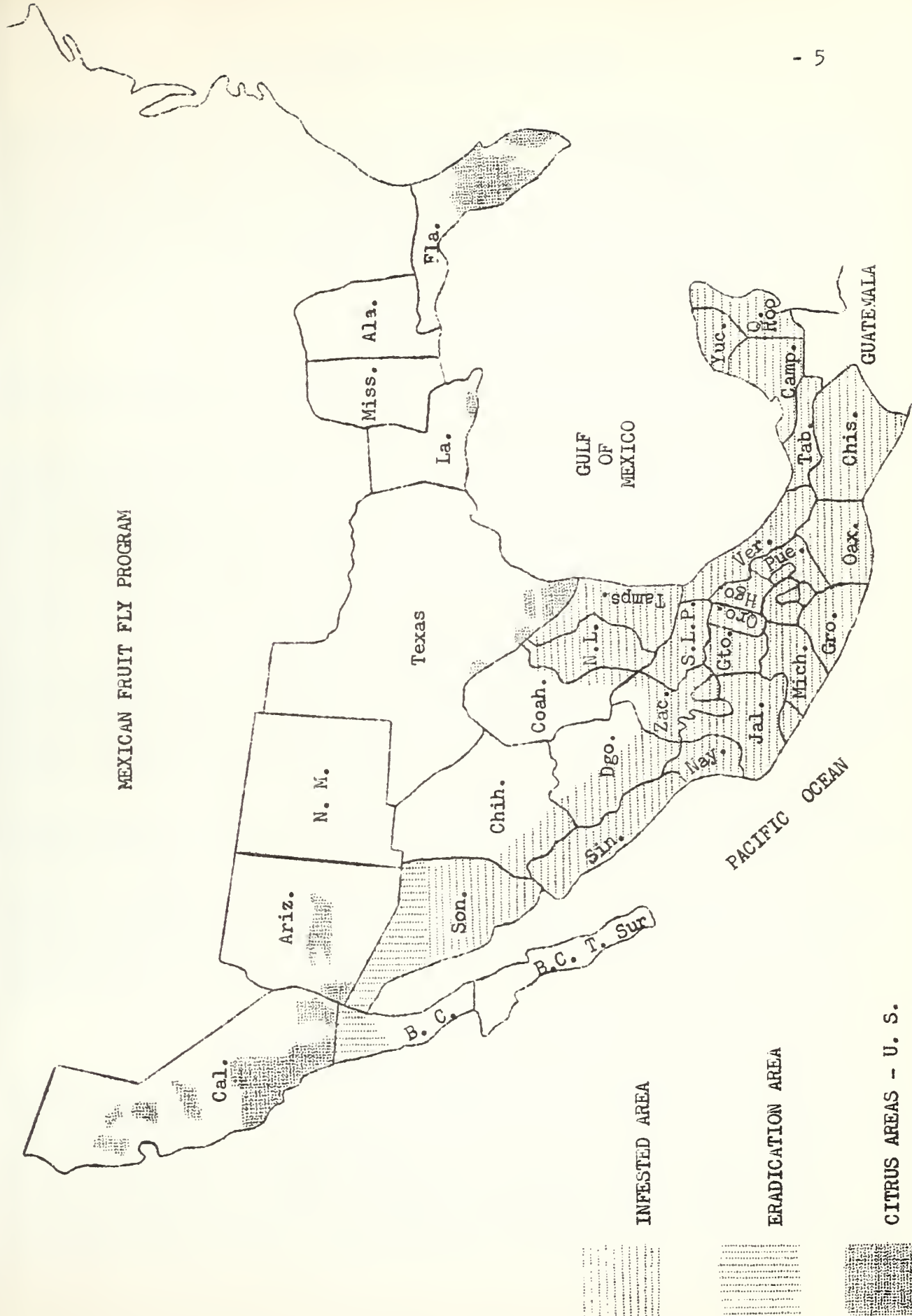
SUMMARY

F. Y. 1963

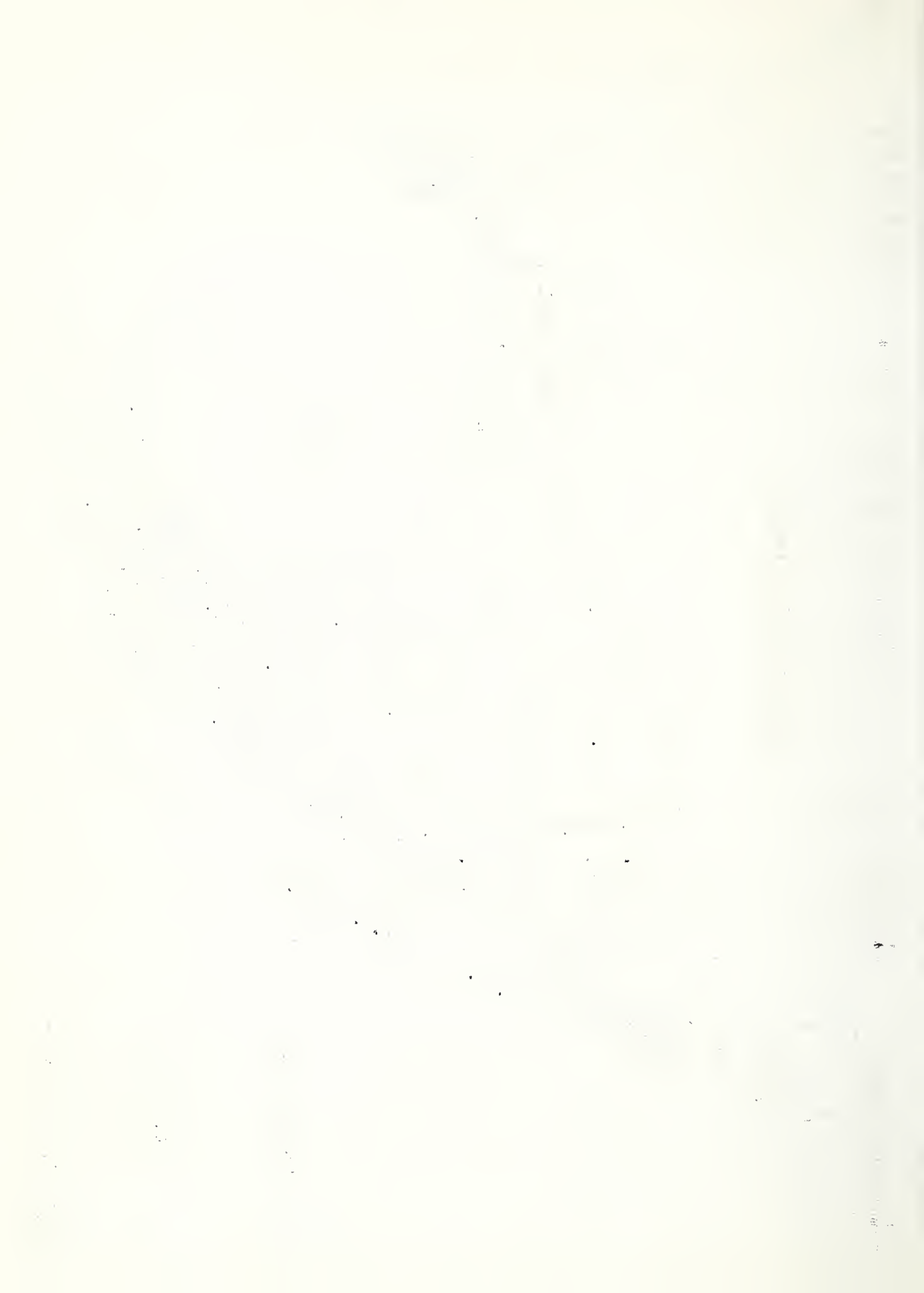
S T A T E	I N S E C T I C I D E   T R E A T M E N T S		
	Number Properties	Number Acres	Number Host Plants
Baja California	30,880	13,538	97,695
T O T A L	30,880	13,538	97,695







CITRUS AREAS - U. S.



The areas in Mexico south of the chemical control zones bordering on the United States are designated as biological control zones. In the biological control zone, commercial control is obtained by using parasites introduced into Mexico for citrus blackfly control. Controlled infestations in the biological control zone reduces the hazard of spread of the citrus blackfly to the free areas to the north. There are a number of citrus blackfly parasites in Mexico but the three principal ones are:

1. Prospaltella opulenta
2. Prospaltella clypealis
3. Amitus hesperidum

These three parasites are captured in areas of high parasitization for release in areas where parasites are few and citrus blackfly infestations are relatively high.

During the past three years, it has become increasingly evident that Prospaltella opulenta, one of the three dominant parasites of the citrus blackfly in Mexico is much better adapted to a broad ecological range than Prospaltella clypealis or Amitus hesperidum. Considering the relative effectiveness of P. opulenta, under all climatic conditions in which it has been observed, it has been decided to release it in all areas of the biological control zone. There is every reason to expect that this policy will result in fewer fluctuations in parasitization because of climatic irregularities.

It was necessary to reduce heavy citrus blackfly infestation with little or no parasitization in some groves by using insecticides. The Plant Pest Control Division and the Defensa Agricola reached agreement on this procedure for certain groves and the results were excellent. Parasites were liberated where populations of citrus blackfly had been reduced by the use of insecticides and this quickly resulted in good commercial control.

This year, for the first time, surveys revealed the presence of citrus blackfly in several areas of the State of Yucatan. Parasites were liberated in these areas and commercial control obtained.

Surveys throughout the country revealed that commercial control was generally good. However, in some areas, insecticide drift from cotton fields adjacent to citrus groves resulted in high mortality of the parasites, so that citrus blackfly populations built-up and caused commercial damage.

#### CITRUS BLACKFLY (CHEMICAL CONTROL)

The States of Tamaulipas, Nuevo Leon, Sonora and Baja California are important citrus producing areas of Mexico and are adjacent to the States of Texas, Arizona and California, which also have extensive plantings of citrus. The States of Baja California and Nuevo Leon have no known citrus blackfly infestations. The States of Tamaulipas and Sonora are infested with citrus blackfly in their southern portion, but effort is directed to keep the northern sections of Sonora, Tamaulipas and the States of Baja California and Nuevo Leon free of the pest.





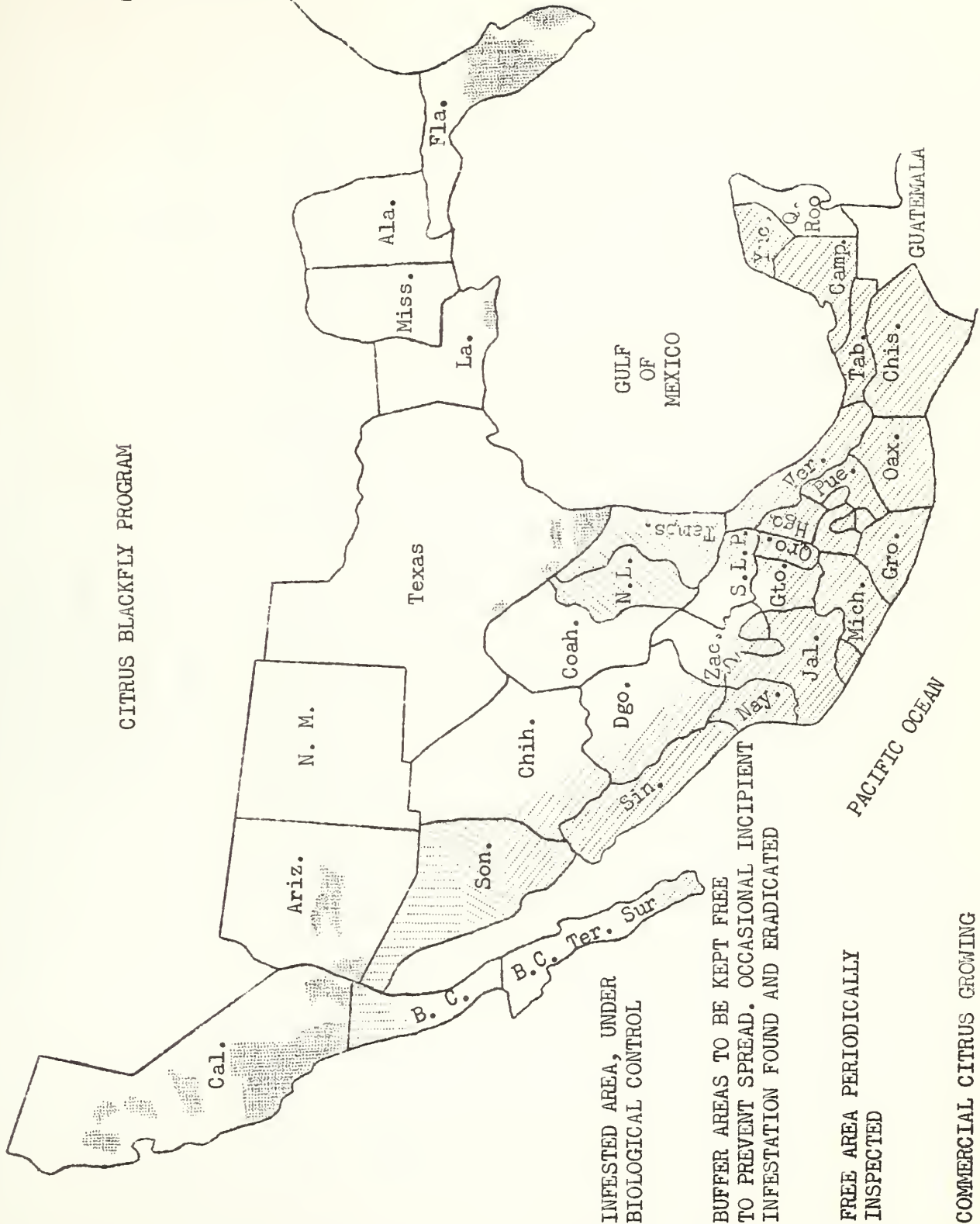
Citrus Blackfly  
No. 2, Cont.

Surveys for detection in the areas to be kept free of citrus blackfly were carried on throughout the year. When the surveys revealed infestations steps were taken immediately to delimit the infestation following which insecticide applications were made for eradication.

In northern Nuevo Leon an accelerated eradication program was completed in October. Surveys following indicated that the citrus blackfly apparently had been eradicated. However, in Nuevo Leon, in January 3 infestations were found, and one reinfestation was found in February. These were considered to be infestations resulting from the heavy movement of Veracruz oranges into the area. All of these infestations were very light and timely spray applications of insecticide eradicated them. At the end of the fiscal year, there were no known infestations of citrus blackfly in the areas designated as chemical control zones.



CITRUS BLACKFLY PROGRAM



INFESTED AREA, UNDER  
BIOLOGICAL CONTROL

BUFFER AREAS TO BE KEPT FREE  
TO PREVENT SPREAD. OCCASIONAL INCIPIENT  
INFESTATION FOUND AND ERADICATED

FREE AREA PERIODICALLY  
INSPECTED

COMMERCIAL CITRUS GROWING  
AREA UNITED STATES

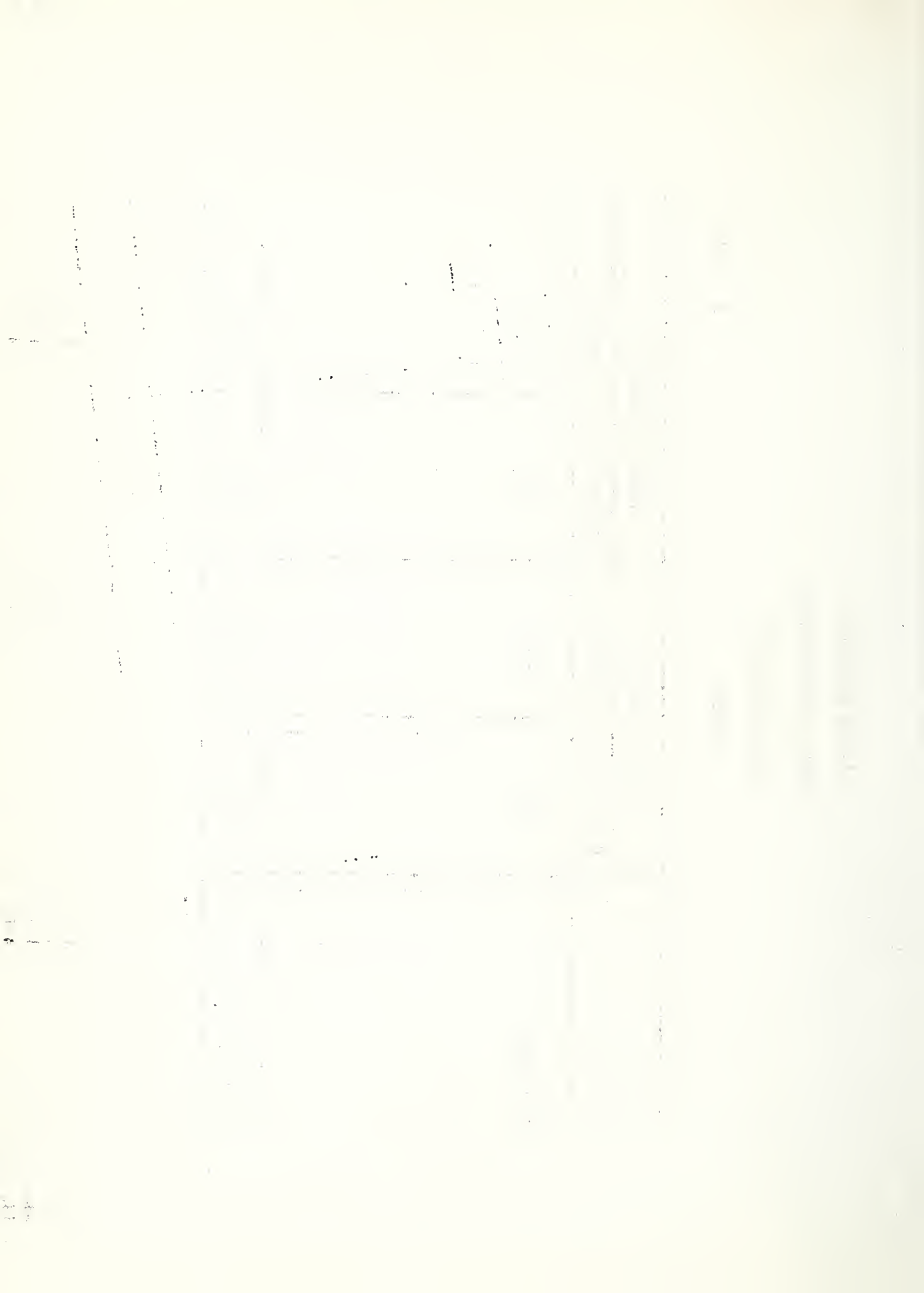


CITRUS BLACKFLY  
SURVEY AND DETECTION  
(BIOLOGICAL ZONE)

SUMMARY F. Y. 1963

S T A T E	Number Surveyed		Number Infested	
	Properties	Hosts	Properties	Hosts
Tamaulipas	908	513,650	334	17,065
T O T A L	908	513,650	334	17,065





## CITRUS BLACKFLY

## COLONIZATION OF PARASITES

## SUMMARY

F. Y. 1963

S T A T E	PARASITES COLONIZED			
	<u>Prospaltella</u> <u>opuierita</u>	<u>Prospaltella</u> <u>Clypealis</u>	<u>Amitus</u> <u>Hesperidum</u>	<u>Total</u> <u>by State</u>
Campeche	204,000			204,000
Chiapas	527,300	3,600	43,500	574,400
Michoacan	746,000	7,000	10,100	763,100
Guanajuato	44,200			44,200
Sonora	17,000			17,000
Gerrero	11,000		17,000	28,000
San Luis Potosi	300,000	48,300		348,300
Puebla	3,080			3,080
Yucatan	53,175			53,175
Durango	20,300			20,300
State Unknown	20,200			20,200
TOTAL	1,946,255	58,900	70,600	2,075,755



CITRUS BLACKFLY  
SURVEY AND DETECTION  
(CHEMICAL ZONE)

SUMMARY F. Y. 1963

S T A T E	Number Surveyed		Number Infested	
	Properties	Host Examined	Properties	Hosts
Nuevo Leon	16,630	1,141,437	5	29
Tamaulipas	7,728	114,530	0	0
Coahuila	494	1,621	0	0
Sonora	5,078	55,655	0	0
Baja California	884	6,109	0	0
T O T A L	30,814	1,319,352	5	29





# CITRUS BLACKFLY

## REGULATORY ACTIVITIES

(CHEMICAL ZONE)

F. Y. 1963

### SUMMARY

S T A T E	INSPECTION FOR CERTIFICATION	
	Processing Plants	Other
Nuevo Leon	60	96
TOTAL	60	96



## CITRUS BLACKFLY

## CONTROL ACCOMPLISHMENTS

## SUMMARY

F. Y. 1963

S T A T E	INSECTICIDE TREATMENT	
	Properties Sprayed (Ground)	Host Plants Sprayed
Nuevo Leon (Chemical Zone)	2,081	538,844
Tamaulipas (Biological Zone)	3	11,064
T O T A L	2,084	549,908



## KHAPRA BEETLE

Surveys for the detection of khapra beetle were carried on during the year throughout the region. Results were negative. Emphasis on surveys was given to properties with a khapra beetle history, grain storages, and distributors. The surveys were made in the States of Tamaulipas, Nuevo Leon, Coahuila, Durango, Chihuahua, Baja California, Sonora and Sinaloa.

Regulations of the Defensa Agricola requiring the fumigation of all wheat from Mexicali, Baja California moving south continued in force. Fumigation of used sacks in the Mexicali, Baja California area was required, as was the fumigation of all used or contaminated bagging arriving by ship at the port of Ensenada, Baja California.





# KHAPRA BEETLE

## SURVEY AND DETECTION

### SUMMARY

F. Y. 1963

S T A T E	Number Properties Surveyed	Number Specimen Collections	NUMBER INFESTED	
			Properties	Cubic Feet
Baja California	654	170	0	0
Sonora	203	71	0	0
Sinaloa	12	6	0	0
Chihuahua	30	33	0	0
Durango	3	67	0	0
Coahuila	3	48	0	0
Nuevo Leon	14	62	0	0
Tamaulipas	5	0	0	0
T O T A L	924	457	0	0



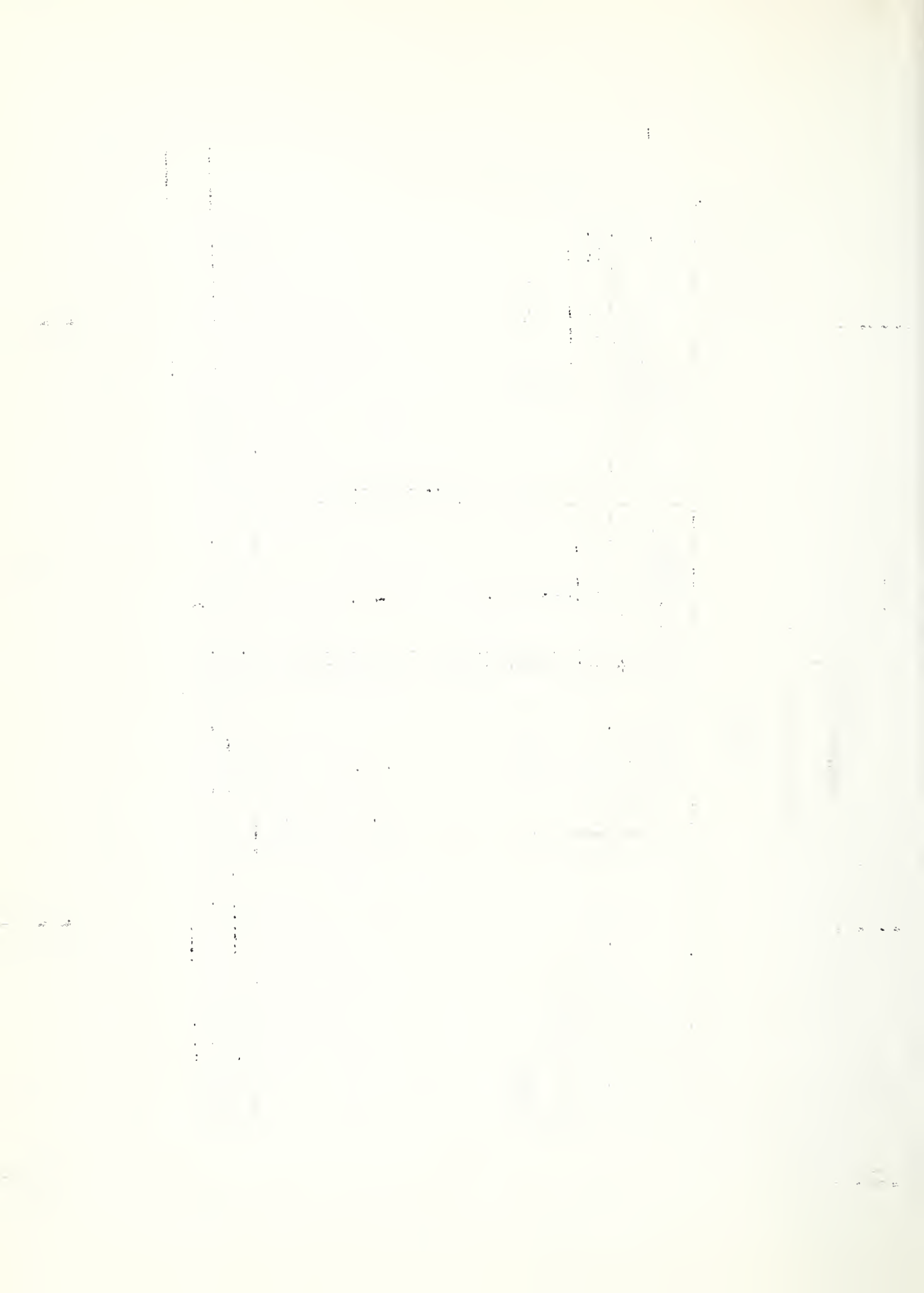
# KHAPRA BEETLE

## REGULATORY ACTIVITY

### SUMMARY

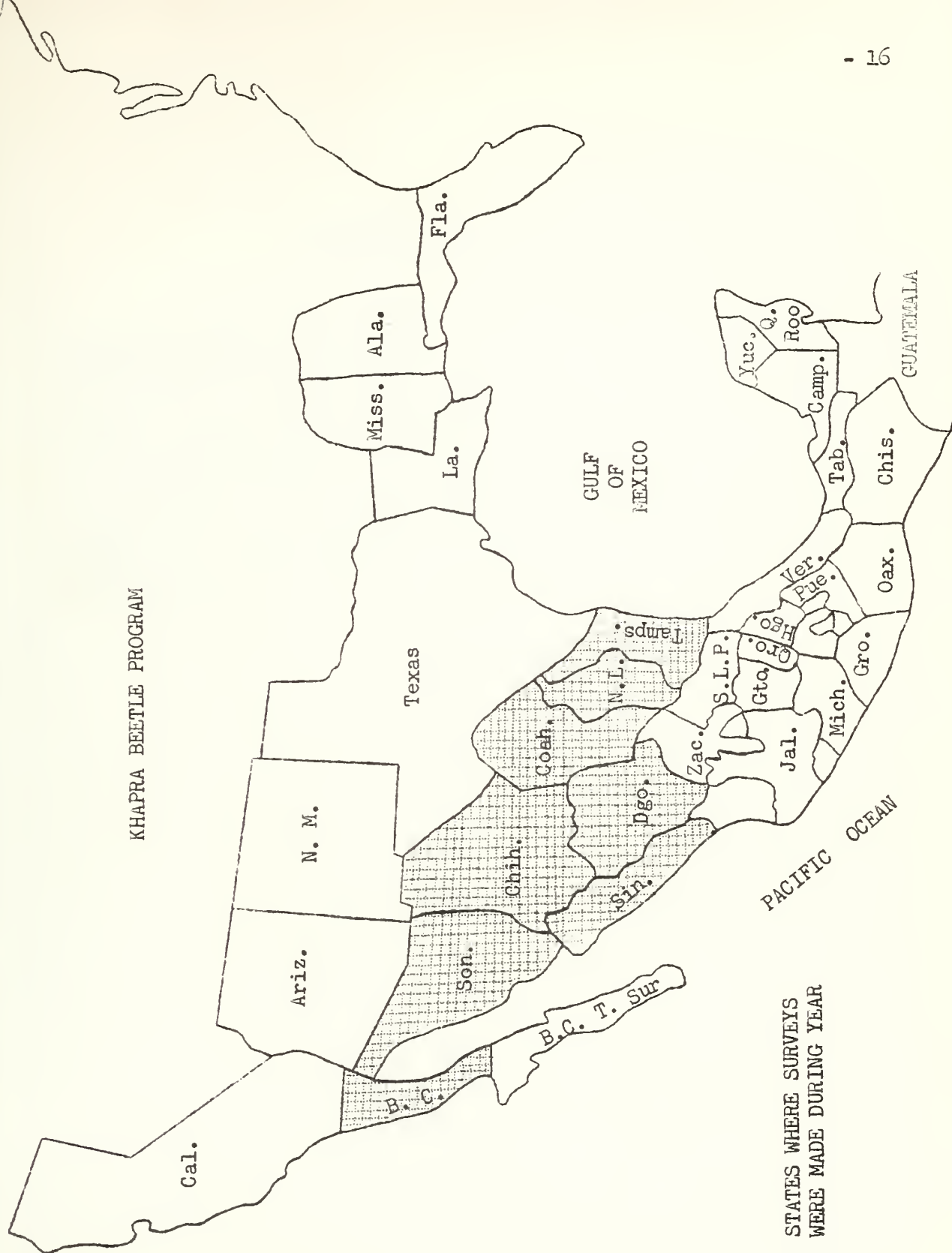
F. Y. 1963

S T A T E	COMMODITY LOTS TREATED		TOTAL ALL TREATMENTS
	Fumigated	Other	
Baja California	12	-	12
Sinaloa	3	-	3
T O T A L	15	-	15



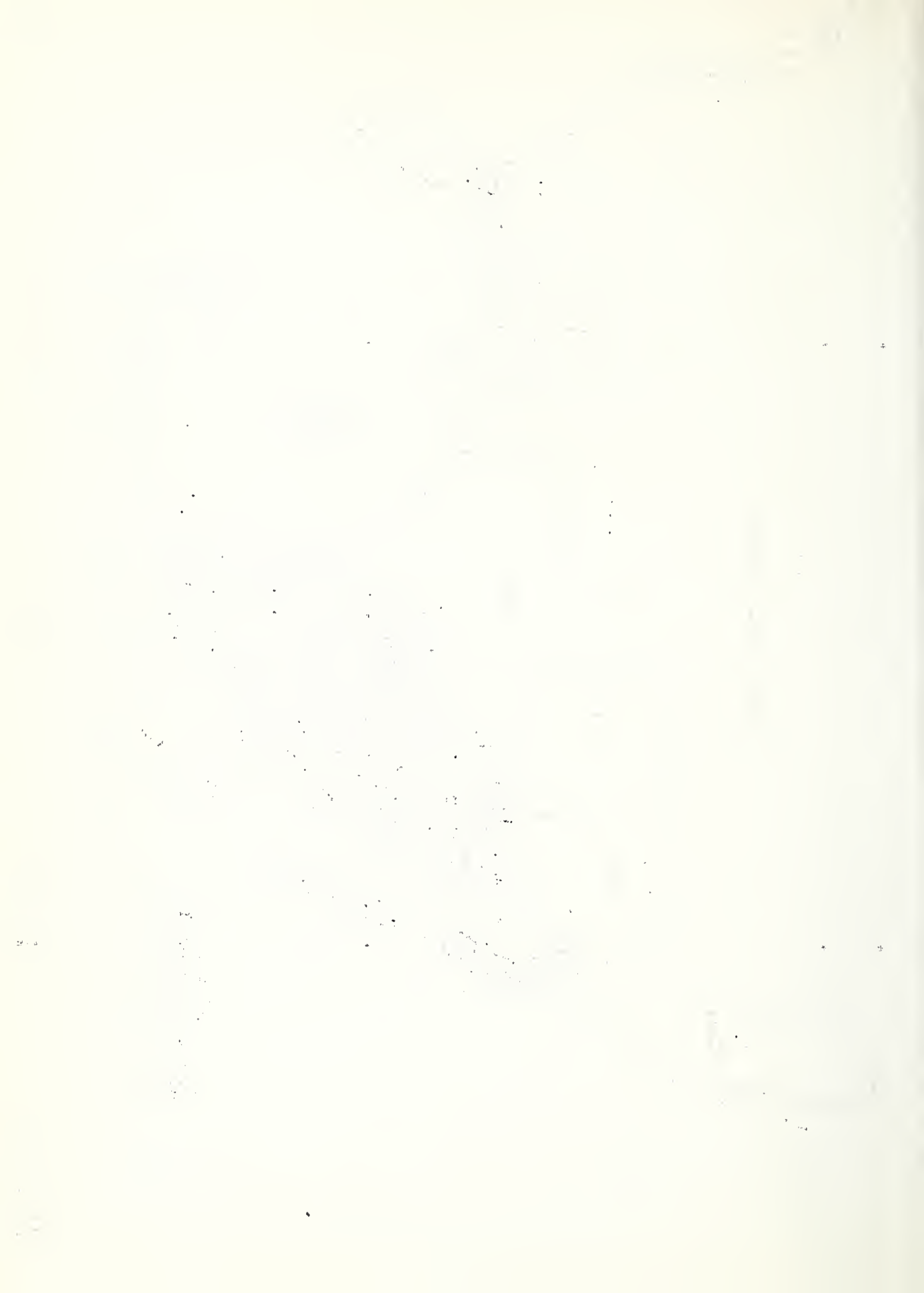


# KHAPRA BEETLE PROGRAM



STATES WHERE SURVEYS  
WERE MADE DURING YEAR





#### MEDITERRANEAN FRUIT FLY

The Mediterranean fruit fly is known to be present in the Central American Countries of Costa Rica and Nicaragua. The presence of this serious pest in Central America is recognized as a threat to Mexico and the United States. The considerable traffic by sea, air and land from Central America to Mexico and through Mexico to the United States offers a ready avenue of entry for the Mediterranean fruit fly. Officials of the United States Department of Agriculture and the Secreatria de Agricultura y Ganaderia of Mexico, in the face of this threat are in agreement to cooperatively carry out a trapping program for the Mediterranean fruit fly in Mexico. Trapping operations were carried out in strategic areas in Mexico. Results were negative.



## MEDITERRANEAN FRUIT FLY

- 18

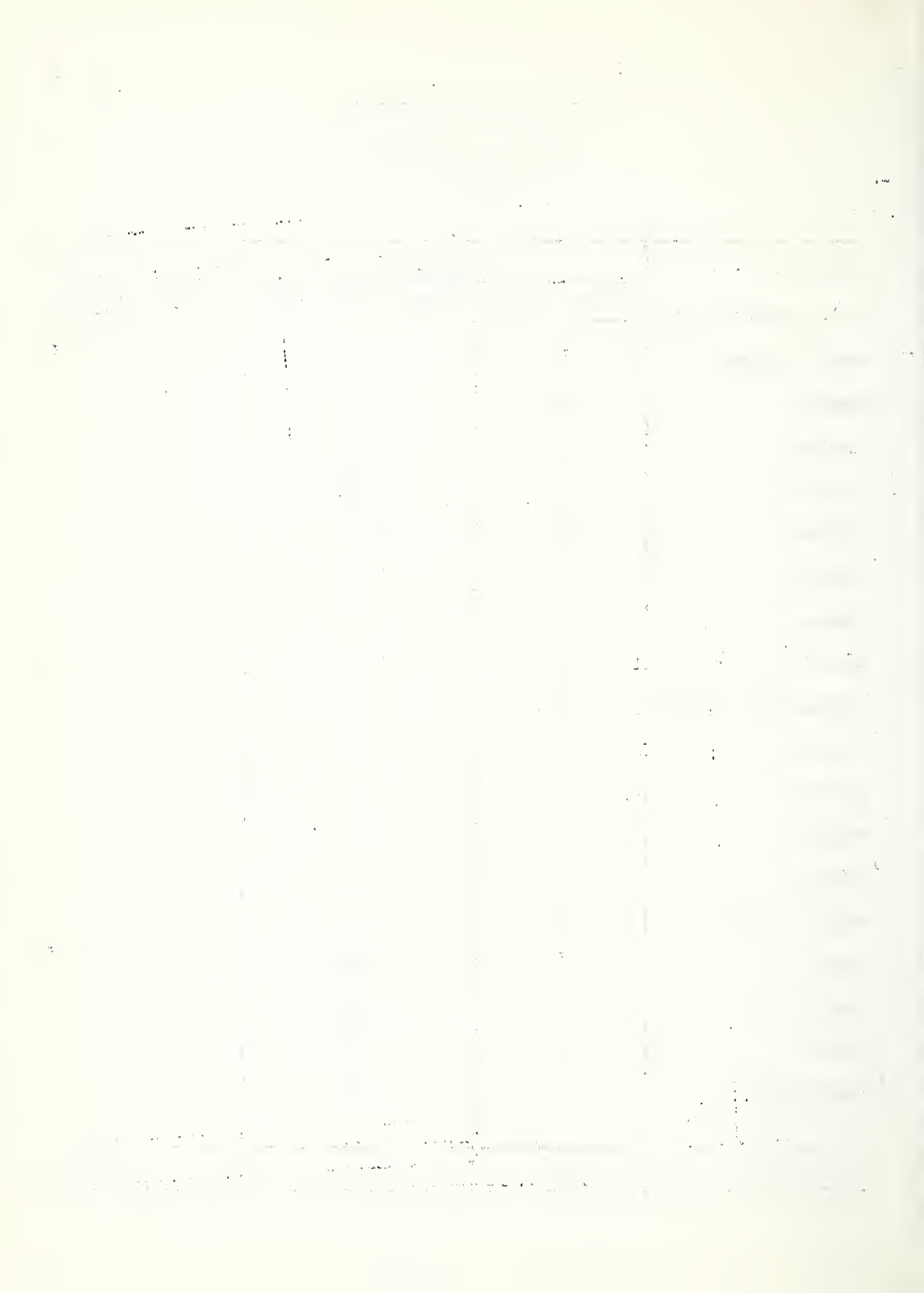
## SURVEY AND DETECTION

## SUMMARY

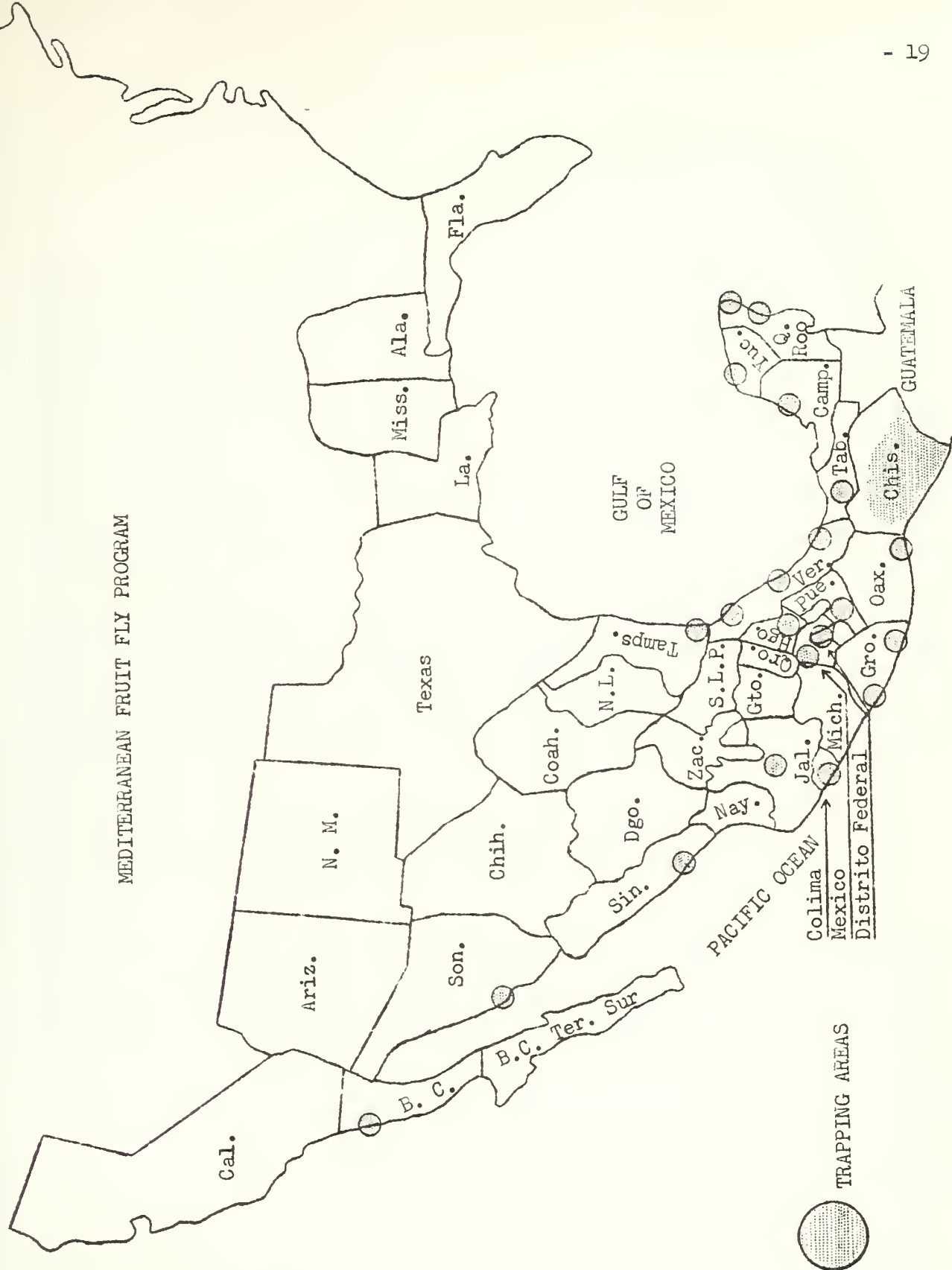
F. Y. 1963

S T A T E	NUMBER OF		
	Traps in Use	Trap Inspections	Positive Specimens
Baja California	25	439	0
Sonora	29	619	0
Sinaloa	40	768	0
Jalisco	25	150	0
Chiapas	2,098	44,916	0
Oaxaca	50	1,650	0
Tabasco	40	720	0
Campeche	101	1,320	0
Quintana Roo (Territory)	131	1,520	0
Yucatan	350	4,406	0
Veracruz	174	2,938	0
Guerrero	240	1,490	0
Colima	20	240	0
Federal District	66	1,584	0
Mexico	10	200	0
Puebla	10	220	0
Hidalgo	10	240	0
Tamaulipas	312	5,768	0
T O T A L	3,731	69,188	0





MEDITERRANEAN FRUIT FLY PROGRAM





## PINK BOLLWORM

All of East Mexico except southern Tamaulipas and northern Veracruz is generally infested by the pink bollworm, but in West Mexico the pink bollworm is not known to be present. Surveys for detection were carried on throughout West Mexico, in the States of Sinaloa, Sonora and Baja California, which comprise an important cotton producing area adjacent to the States of Arizona and California. The results of all inspections were negative. Survey methods used included inspection of gin trash, blooms, lint cleaners and Argon light traps. Limited surveys were carried out in East Mexico in the generally infested area, for purposes of comparability with previous years and to aid program planning. Also, some surveys for detection, including inspection of gin trash, lint cleaners, and blooms were carried out in the pink bollworm free areas of Tamaulipas and Veracruz, with negative results.

Cultural control was practiced in East Mexico, and results obtained were generally satisfactory. Cultural control involved controlled planting dates, and the destruction of cotton plants, followed by plowing. Surveillance of the areas was maintained following stalk destruction in order to assure that the fields stayed free of sprout and stub cotton, to assure a host free period. It was observed that pink bollworm infestations this year were lighter than the previous year, and commercial damage was confined to limited areas.

In West Mexico, largely as a preventive measure against the pink bollworm controlled planting dates were observed, and destruction of cotton stalks was required and the areas kept free of stub cotton to obtain host free period.

Regulatory activity in East Mexico consist of gin and oil mill certification. In all of East Mexico, except in Tamaulipas, sterilization of the cotton seed as a continuous process of ginning was required. Sterilization was made a requirement in Juarez again this year. In Tamaulipas, however, planting or industrial seed destined for movement outside of the area was sterilized.

In West Mexico strategically located road stations were operated to intercept and treat or destroy contaminated host material from East Mexico.





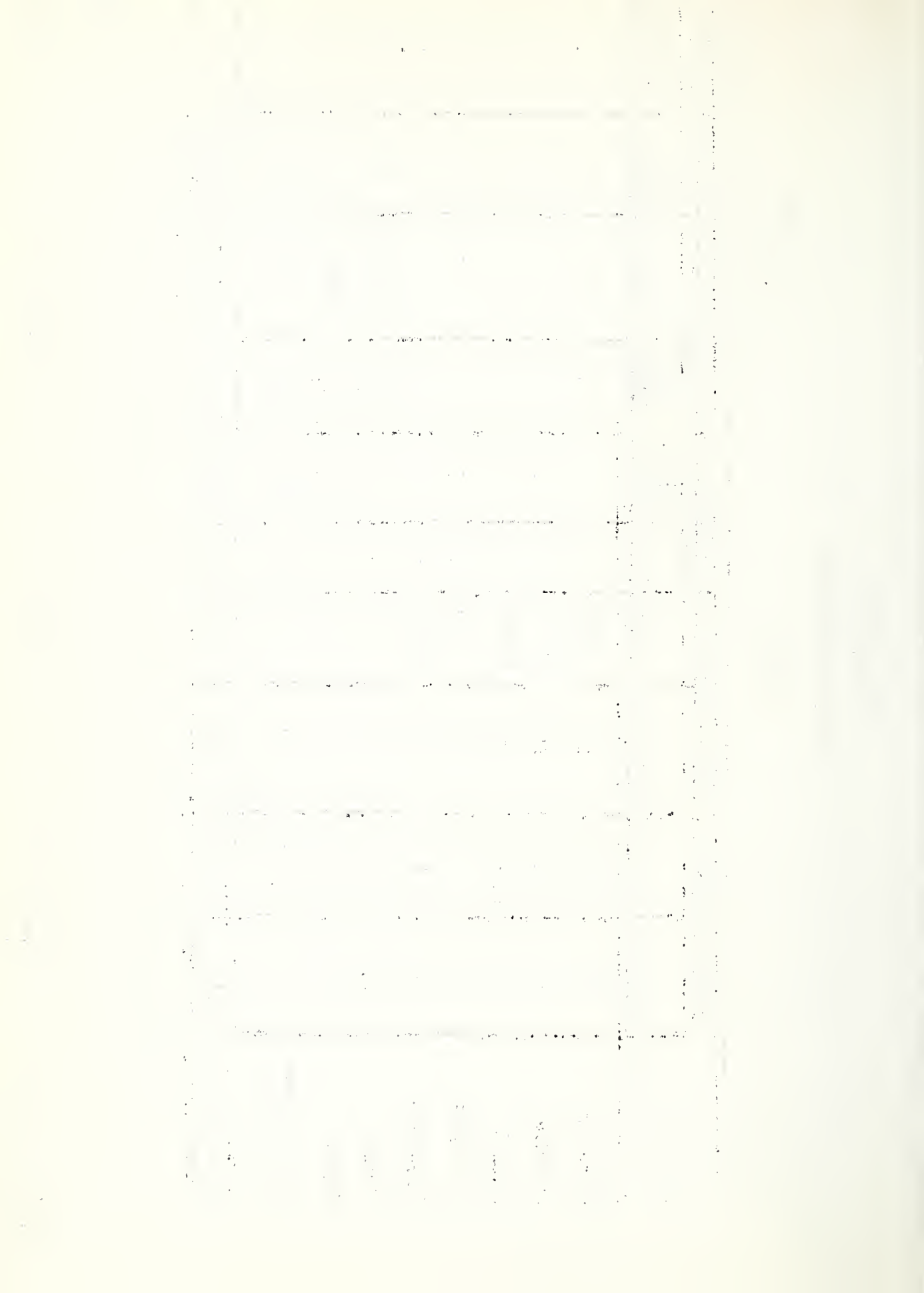
## PINK BOLLWORM

## SURVEY AND DETECTION

## SUMMARY

F. Y. 1963

S T A T E	Number Surveyed		Number Infested		NUMBER		I N S P E C T I O N S			NUMBER
	Properties	Acres	Properties	Acres	Traps in Use	Trap Collections	Bushels Gin Trash	Blooms	Lint Cleaner	
Chihuahua	194	8,082	158	6,146	-	-	-	-	-	-
Coahuila	118	12,122	115	11,085	-	-	-	-	-	-
Durango	140	16,160	140	16,160	-	-	-	-	-	-
Nuevo Leon	127	964	60	867	-	-	-	-	-	-
Tamaulipas	440	20,147	70	5,892	-	-	-	-	-	-
Sinaloa	136	8,267	0	0	1	0	5,492	436,888	434	0
Sonora	238	23,482	0	0	15	283	17,171	630,658	2,413	0
Baja California	54	2,471	0	0	15	329	10,339	81,679	3,085	0
T O T A L	1,447	91,695	543	40,150	31	612	33,002	1,149,225	5,932	



# PINK BOLLWORM

## REGULATORY ACTIVITIES

### SUMMARY

F. Y. 1963

S T A T E	NUMBER Inspection for Certification	C O M M O D I T Y		L O T	T R E A T M E N T
		No. Fumigated	Other		
Chihuahua	380	1,239	795		2,034
Durango	1,324				
Coahuila	956				
Nuevo Leon	158				
Tamaulipas	6,777				
Sinaloa		301*	777		1,078*
Sonora		2,712	1,772		4,484
Baja California					
T O T A L	9,595	4,252	3,344		7,596

\* 301 fumigations at El Salto, Durango reported in State of Sinaloa D.P.D.



PINK BOLLWORM  
CONTROL ACCOMPLISHMENTS

SUMMARY

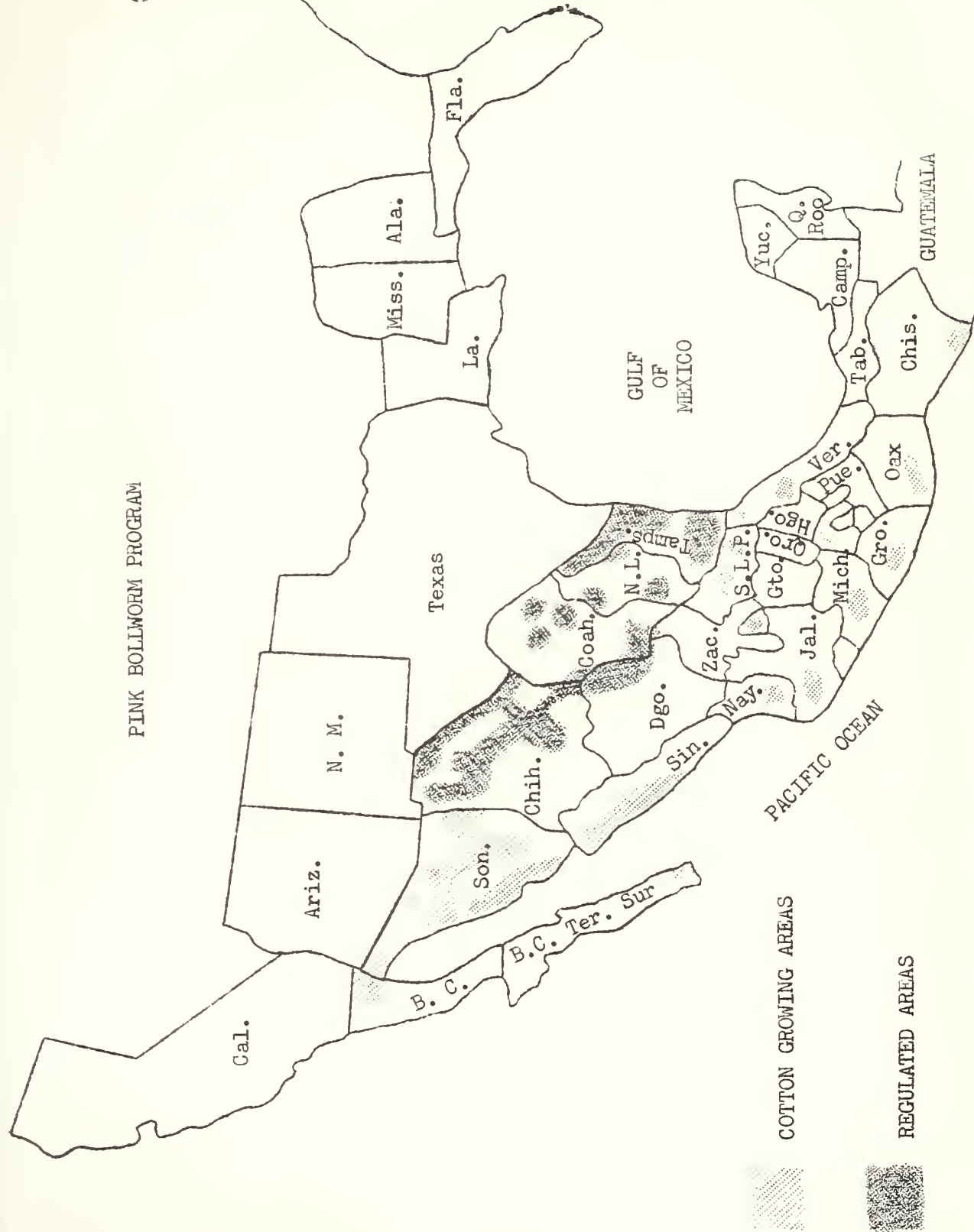
F. Y. 1963

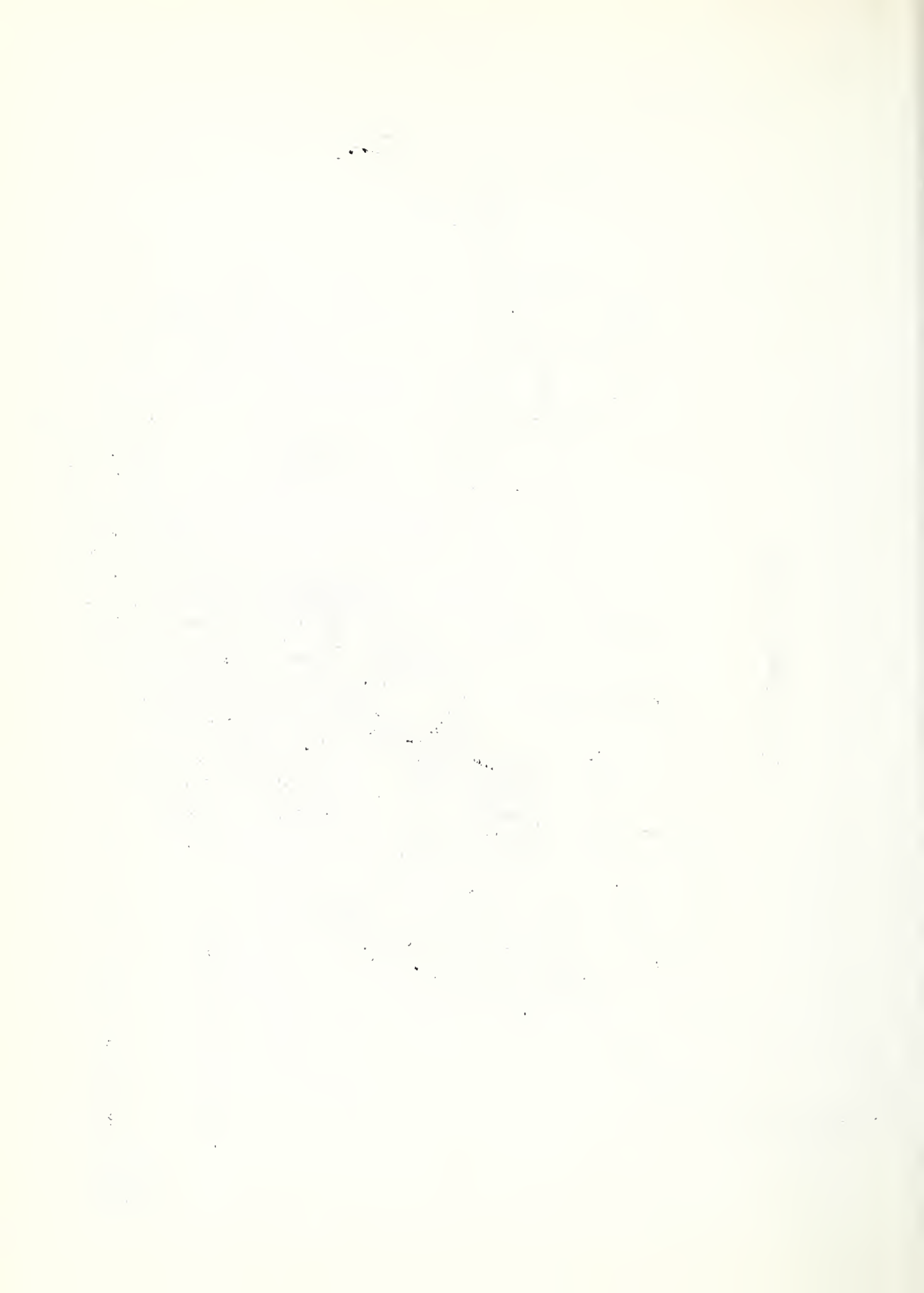
S T A T E	M E C H A N I C A L
	Number of Acres Treated
Chihuahua	215,990
Coahuila	55,065
Durango	82,645
Nuevo Leon	31,728
Tamaulipas	572,195
T O T A L	957,623





PINK BOLLWORM PROGRAM





## INSPECTION STATIONS

In West Mexico, inspection stations strategically located on highways, railroad lines, and at airports and seaports were operated to prevent the entry of plant pests of mutual concern to Mexico and the United States. Among the plant pests which are of concern to the two nations are Mexican fruit fly, Mediterranean fruit fly, pink bollworm, khapra beetle, citrus blackfly, and boll weevil.

In East Mexico quarantine stations were in operation to prevent the entry of citrus blackfly from infested areas into the chemical control zones of the States of Nuevo Leon and Tamaulipas.

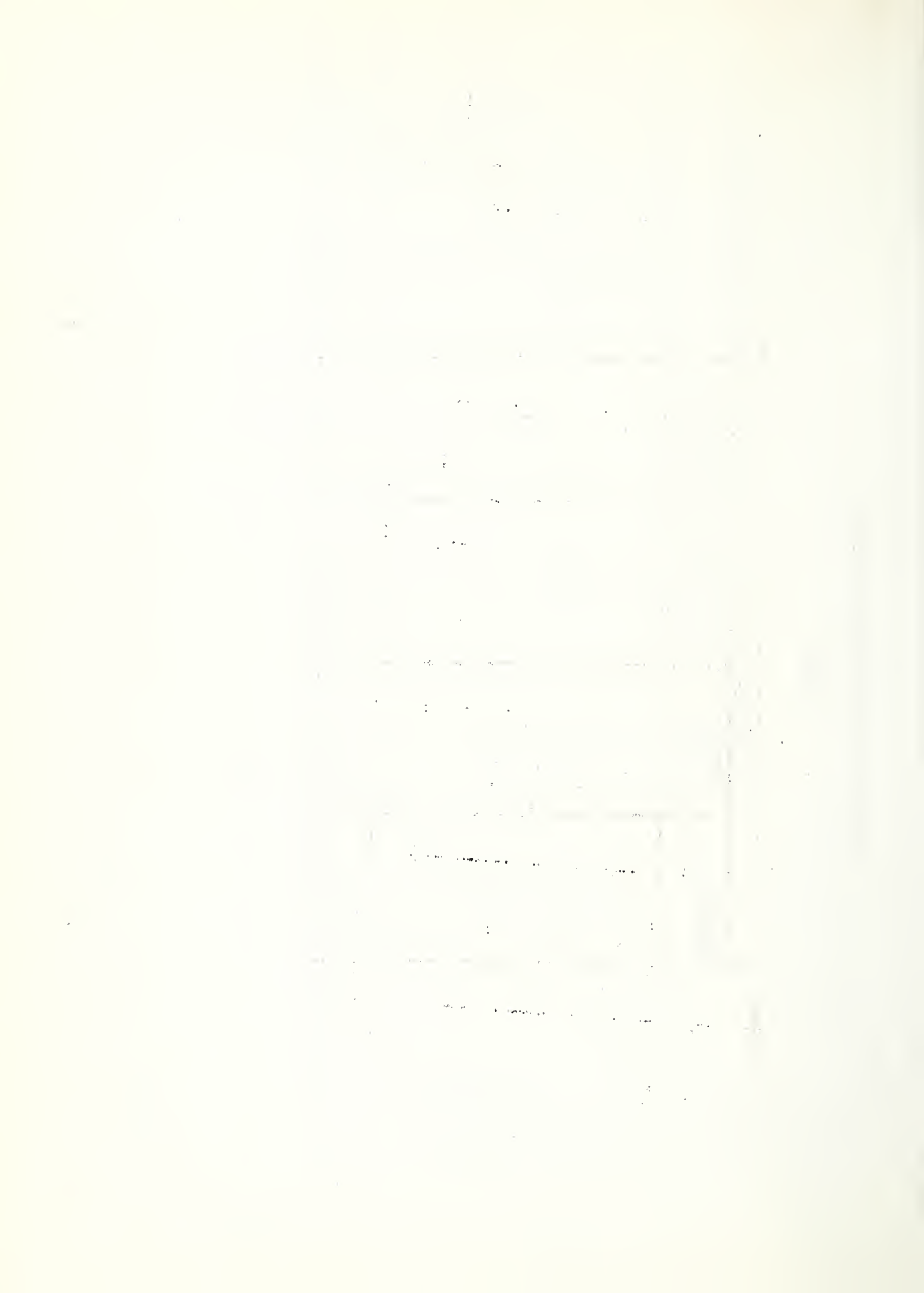


COOPERATIVE QUARANTINE INSPECTION

SUMMARY

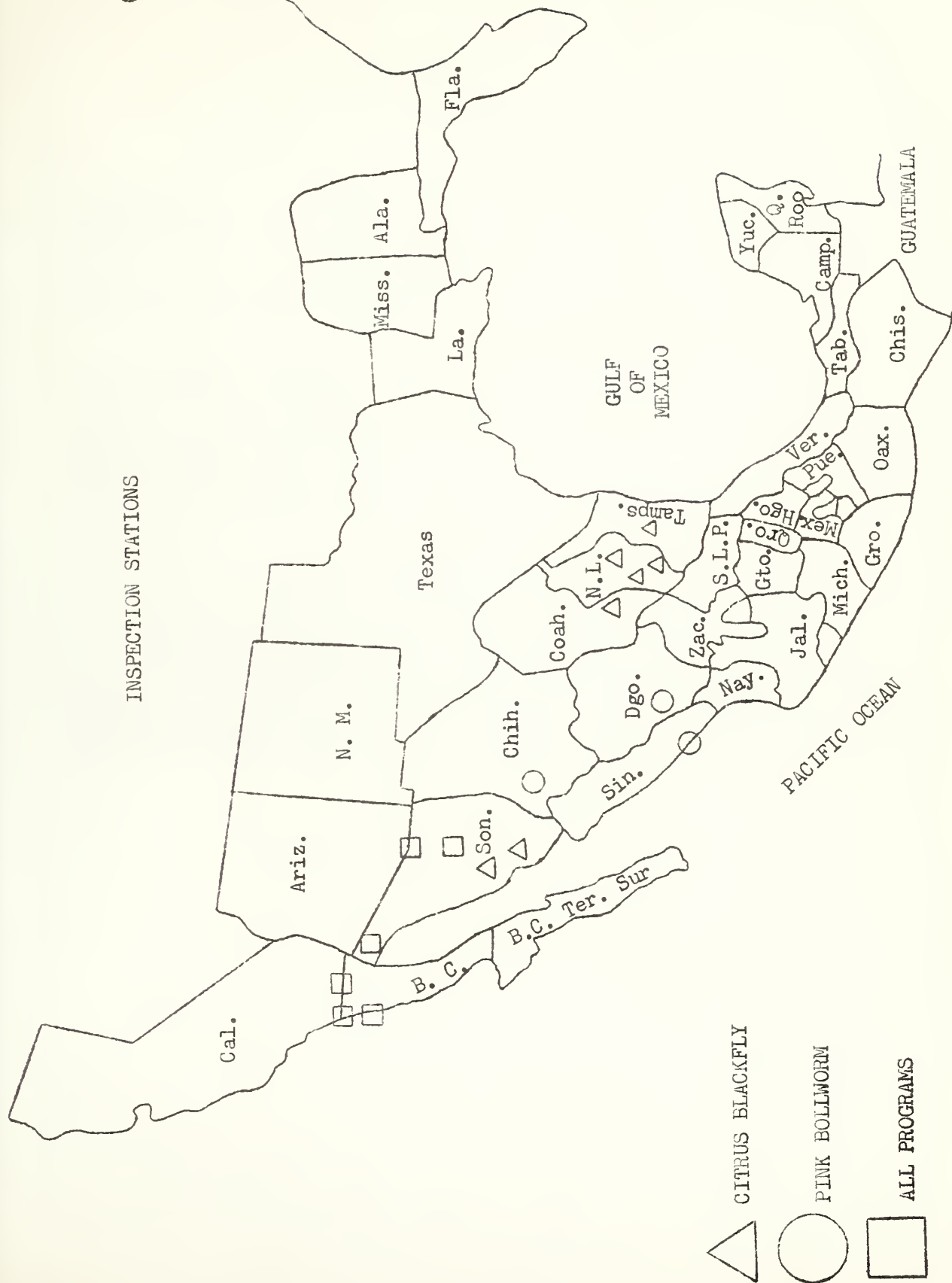
F. Y. 1963

S T A T E	N U M B E R O F				H O S T I N T E R C E P T E D		
	Inspections	Passengers and Braceros	Pieces of baggage and Express	Vehicles cleaned or fumigated	MFF	CBF	PBW
Baja California	14,252	43,468	213,783	-	684	61	2
Sonora	283,609	273,342	24,181	4,484	38,418	1,783	1,446
Sinaloa	76,015	85,928	-	701	-	-	339
Durango	20,823	14,221	-	37	-	-	668
Chihuahua	754	-	-	2,034	-	-	726
T O T A L	395,453	416,959	237,964	7,256	39,102	1,844	3,181





INSPECTION STATIONS



△ CITRUS BLACKFLY

○ PINK BOLLWORM

□ ALL PROGRAMS



## BOLL WEEVIL

Virtually all of the Republic of Mexico's cotton producing areas are infested with the boll weevil. However, the boll weevil is not known to be present in the State of Baja California, neither is it known to infest cotton in the extreme northwest of Sonora nor in the northwest of Chihuahua and the Juarez Valley of Chihuahua. Surveys conducted for detection in these areas were negative.

The presence of the boll weevil (a strain apparently adapted to the arid irrigated regions) in north central Sonora is recognized as being a hazard to cotton plantings of northwestern Sonora and the State of Baja California, as well as to cotton plantings in Arizona, New Mexico and California. In Chihuahua, the northern movement of the boll weevil along the Rio Grande is cause for great concern that the boll weevil could reach the Juarez Valley across the Rio Grande from the El Paso, Texas Valley.

In the State of Sonora, in its north central area, fields were sprayed in the Fall with Methyl Parathion to eradicate diapausing boll weevil, and to create a greater barrier between infested and free areas. Also, in a coordinated program with the insecticide spraying of cotton plantings on the Texas side of the river, Fall applications of Methyl Parathion were made of cotton fields beginning at Barrancos de Guadalupe, Chihuahua along the Rio Grande northwest to Cedillos, Chihuahua, which is just south of the Juarez Valley, to halt the spread of the boll weevil.



BOLL WEEVIL  
SURVEY AND DETECTION

SUMMARY

F. Y. 1963

S T A T E	NUMBER SURVEYED		NUMBER INFESTED		Specimens Collected
	Properties	Acres	Properties	Acres	
Chihuahua	1,021	19,093	302	7,620	1,176
Sonora	523	49,658	523	49,658	6,717
T O T A L	1,544	68,751	825	57,278	7,893





# BOLL WEEVIL

## DEBRIS INSPECTION FOR

## OVERWINTERING ADULTS

### SUMMARY

F. Y. 1963

S T A T E	Collection Area	Fields Surveyed		Sq. Yds. Inspected		Boll Weevil Found	
		Treated	Untreated	Treated	Untreated	Treated	Untreated
Sonora	(April 15 to May 2) Imuris, Sasabe, Sarric	13		132		4	
Sonora	Magdalena - Caborca		27		222		8
Sonora	Hermosillo		6		36		0
Chihuahua	(January) Barrancos de Guadalupe to El Cuervo	21		90		1	
Chihuahua	Ojinaga Valley		3		11		3
T O T A L		34	36	222	269	5	11



# BOLL WEEVIL

## CONTROL ACCOMPLISHMENTS

### TREATMENT PROGRAM FALL 1962

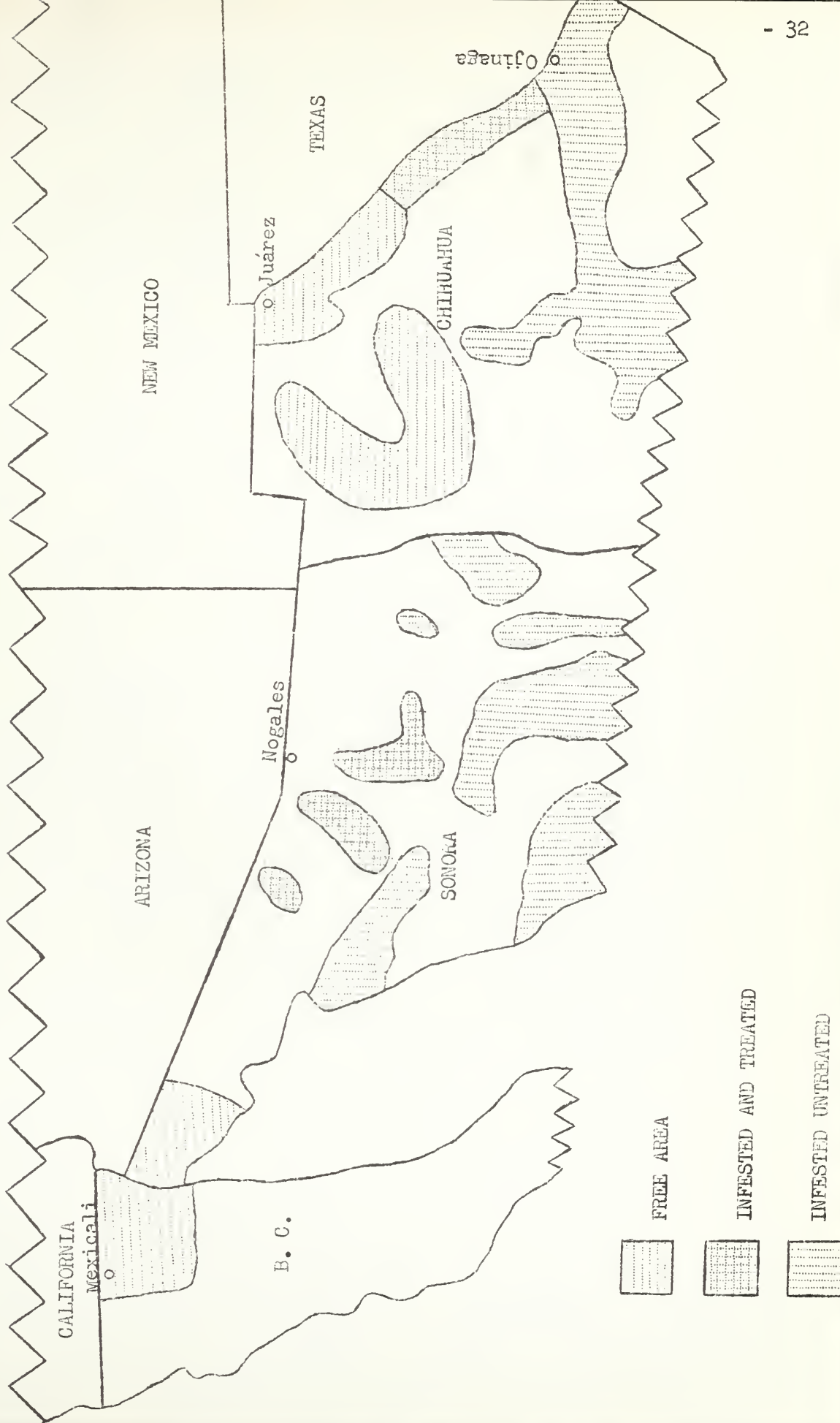
SUMMARY

F. Y. 1963

S T A T E	INSECTICIDE
	Acres Treated (Air)
Chihuahua	6,470
Sonora	7,990
T O T A L	14,460



# BOLL WEEVIL PROGRAM





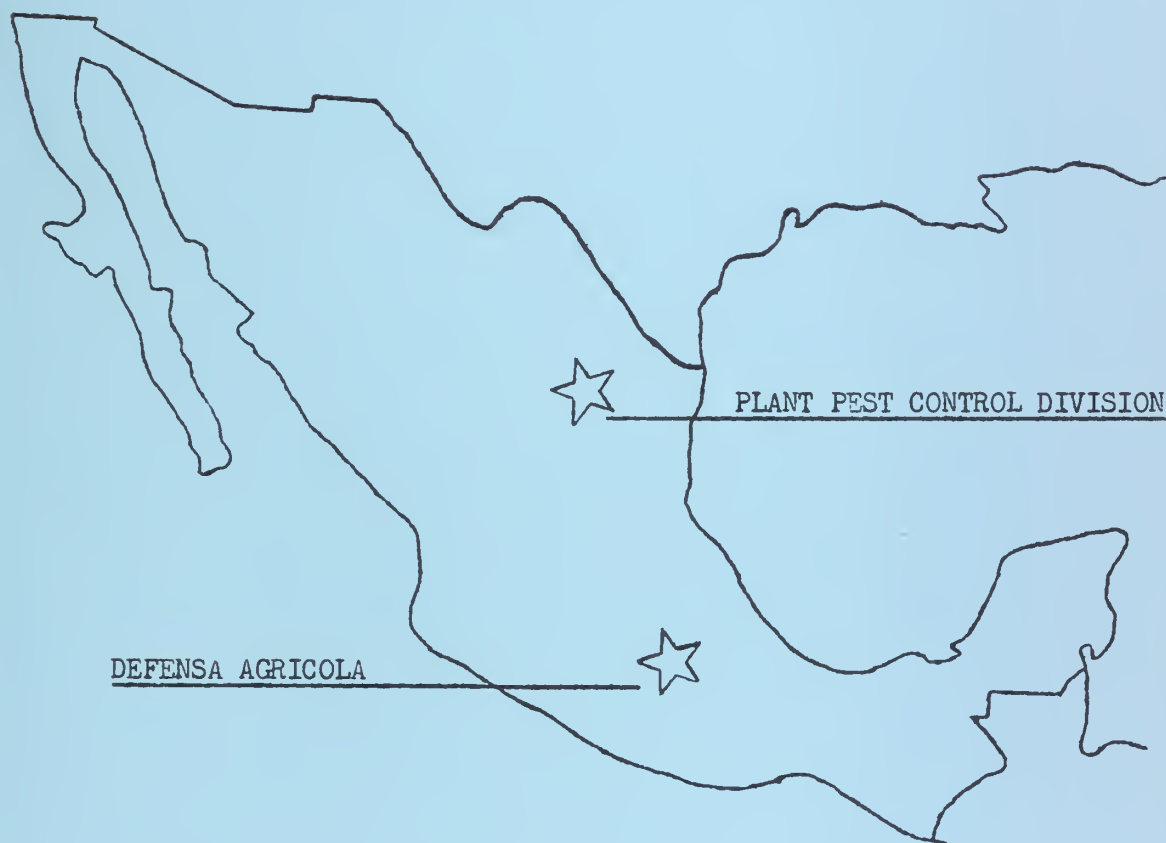


MEXICO REGION

PLANT PEST CONTROL DIVISION - A.R.S. - U.S.D.A.

IN COOPERATION WITH

DEFENSA AGRICOLA - S.A.G.



ANNUAL REPORT

FISCAL YEAR 1963







# PLANT PEST CONTROL PROGRAMS OF THE SOUTHERN REGION

## ANNUAL REPORT

1963

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION





UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION

ANNUAL REPORT  
- 1963 -

SOUTHERN REGION





# CONTENTS

	Page
Map of Southern Region Organization .....	1
Associated Activities .....	3
Table 1--Summary of associated activities, by program, fiscal year 1963.....	5
Table 2--Summary of associated activities, by state, fiscal year 1963.....	6
Barberry Eradication .....	7
Table 3--Barberry Program, regulatory activities, fiscal year 1963.....	7
Citrus Blackfly and Fruit Flies:	
Citrus Blackfly.....	8
Mediterranean Fruit Fly.....	9
Table 4--Mediterranean Fruit Fly Program, survey and control activities, fiscal year 1963.....	10
Table 5--Mediterranean Fruit Fly Program, regulatory activities, fiscal year 1963.....	10
Map--Mediterranean Fruit Fly Program, survey and detection, fiscal year 1963.....	11
Mexican Fruit Fly.....	13
Table 6--Mexican Fruit Fly Program, survey and regulatory activities, fiscal year 1963.....	14
Map--Mexican Fruit Fly Program, survey and detection, fiscal year 1963.....	15
Cooperative Economic Insect Survey.....	17
Beat Leafhopper and Potato Psyllid.....	17
Boll Weevil.....	18
Table 7--Boll Weevil Program, survey and control activities, fiscal year 1963.....	19
Cereal Leaf Beetle.....	20
Cuban May Beetle.....	20
European Chafer.....	21
Golden Nematode.....	21
Table 8--Golden Nematode Program, survey and detection, fiscal year 1963.....	21
Gypsy Moth.....	22
Hoja Blanca.....	22
Table 9--Hoja Blanca Program, survey and control activities, fiscal year 1963.....	23
Khapra Beetle.....	23
Whitefly.....	24
Grasshopper.....	26

	Page
Imported Fire Ant.....	27
Table 10--Imported Fire Ant Program, survey and control activities, fiscal year 1963.....	33
Table 11--Imported Fire Ant Program, regulatory activities, inspection for certification, fiscal year 1963.....	33
Table 12--Imported Fire Ant Program, regulatory activities, certification and commodity treatment, fiscal year 1963.....	33
Table 13--Imported Fire Ant Program, regulatory activities, commodities treated, fiscal year 1963.....	34
Table 14--Status of Imported Fire Ant Program, June 30, 1963.....	34
Map--Imported Fire Ant Program, status of program, June 30, 1963.....	35
Japanese Beetle.....	37
Table 15--Japanese Beetle Program, survey and control activities, fiscal year 1963.....	38
Table 16--Japanese Beetle Program, regulatory activities, inspection and treatment for certification, fiscal year 1963.....	38
Table 17--Japanese Beetle Program, regulatory activities, commodities treated, fiscal year 1963.....	38
Map--Japanese Beetle Program, survey and detection, fiscal year 1963.....	39
Nematode Programs:	
Burrowing Nematode.....	41
Table 18--Burrowing Nematode Program, survey and control activities, fiscal year 1963.....	46
Table 19--Burrowing Nematode Program, regulatory activities, fiscal year 1963.....	46
Soybean Cyst Nematode.....	47
Table 20--Soybean Cyst Nematode Program, survey activities, fiscal year 1963.....	49
Table 21--Soybean Cyst Nematode Program, regulatory activities, fiscal year 1963.....	49
Map--Burrowing Nematode and Soybean Cyst Nematode Programs, survey and detection, fiscal year 1963.....	51
Peach Programs:	
Peach Mosaic.....	53
Table 22--Peach Mosaic Program, survey, control, and regulatory activities, fiscal year 1963.....	53
Phony Peach.....	54
Table 23--Phony Peach Program, survey, control, and regulatory activities, fiscal year 1963.....	57
Map--Peach Mosaic and Phony Peach Programs, survey and detection, fiscal year 1963.....	59

Pink Bollworm and Wild Cotton:	
Pink Bollworm.....	61
Wild Cotton.....	62
Table 24--Pink Bollworm Program, survey and control activities, fiscal year 1963.....	66
Table 25--Pink Bollworm Program, regulatory activities, fiscal year 1963.....	66
Map--Pink Bollworm Program, survey and detection, fiscal year 1963.....	67
Sweetpotato Weevil.....	69
Table 26--Sweetpotato Weevil Program, survey and control activities, fiscal year 1963.....	73
Table 27--Sweetpotato Weevil Program, regulatory activities, fiscal year 1963.....	73
Map--Sweetpotato Weevil Program, survey and detection, fiscal year 1963.....	75
White-Fringed Beetle.....	77
Table 28--White-Fringed Beetle Program, survey and control activities, fiscal year 1963.....	81
Table 29--White-Fringed Beetle Program, regulatory activities, inspection for certification, fiscal year 1963.....	81
Table 30--White-Fringed Beetle Program, regulatory activities, certification and commodity treatment, fiscal year 1963.....	81
Table 31--White-Fringed Beetle Program, regulatory activities, commodities treated, fiscal year 1963.....	82
Table 32--Status of White-Fringed Beetle Program, June 30, 1963.....	82
Table 33--White-Fringed Beetle Program, status of populations, June 30, 1963.....	82
Map--White-Fringed Beetle Program, status of program, June 30, 1963.....	83
Witchweed.....	85
Table 34--Witchweed Program, survey and control activities, fiscal year 1963.....	88
Table 35--Witchweed Program, regulatory activities, fiscal year 1963.....	88
Table 36--Witchweed Program, regulatory activities, commodities treated, fiscal year 1963.....	88
Map--Witchweed Program, survey and detection, fiscal year 1963.....	89

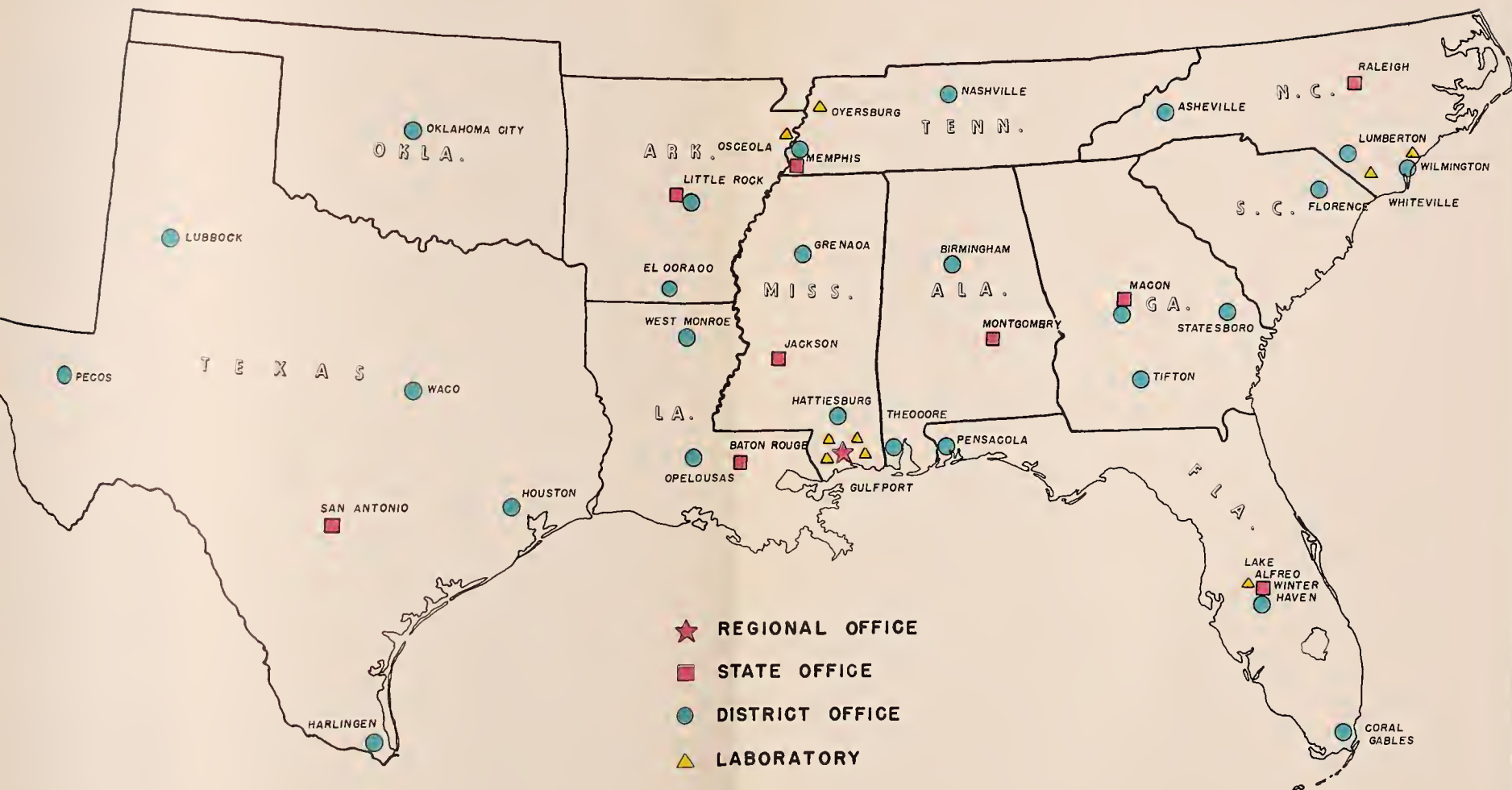




7



UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
 SOUTHERN REGION





## ASSOCIATED ACTIVITIES

The educational program continues to be an important phase of the work in the Southern Region. In conducting some of the control and regulatory programs, news centers have been set up to inform the local press and radio and television stations daily of the progress being made, the areas to be treated, and the problems encountered. This approach has done much to alleviate the apprehensions of the people in the treated areas, particularly in the metropolitan sections, and thus has eliminated many of the difficulties previously experienced in such programs.

Medical Corps officers at military installations are always interested in plant pest control activities from both a control and a regulatory standpoint. Working through the entomological staffs of army installations, we have trained military personnel in methods of conducting survey, evaluating populations, and supervising control work. Illustrated lectures were given, followed by field days set up to train personnel in operational procedures. As a result of these contacts, military installations have cooperated with Plant Pest Control Division by furnishing automotive and radio equipment for transportation and communications, and providing personnel to delimit the infestations on the bases, work the flag lines, and serve as liaison officers between the control units and headquarters personnel.

An educated public is a reasonable, understanding, and appreciative public. The extra efforts devoted to educational activities have enabled the Plant Pest Control Division to conduct its programs more efficiently and effectively, to avoid many troublesome situations, and at the same time to reduce the costs of operation.

The Imported Fire Ant Program conducted in Jackson, Mississippi, is an excellent example of the smooth operations resulting from such activities. In view of the unfavorable attitude toward the imported fire ant work encountered just a short time before at Shreveport, Louisiana, it was anticipated that similar difficulties might arise in the Jackson, Mississippi, program. Two things, however, completely changed the situation—first, an efficient, effective, and comprehensive educational program was instigated; and second, the cooperation of the city of Jackson and of Hinds County was secured in financing the undertaking. So successful was the work in Jackson that similar procedures were adopted in the treatment programs at Atlanta, Georgia, and Greenville, Mississippi. The outcome in each of these instances has been gratifying.

Also, the effective functioning of educational and public information activities greatly aided the smooth operation of the Mediterranean Fruit Fly Program in Miami, Florida, where the work was confined, for the most part, to metropolitan areas—areas in which the people had little interest in the program and where a congested population intensified conditions for objections and dissatisfaction. By properly informing the public, major difficulties were averted and the work was accomplished in an atmosphere of cooperative understanding.

Radio and television have proved to be a most effective means of reaching the public promptly, and station managers generally have been interested, willing, and desirous to be of service. It is planned to utilize these services to a fuller extent in the future.



At the request of the Fourth U. S. Army Medical Laboratory, Fort Sam Houston, Texas, an educational program on the imported fire ant was conducted for their personnel. The picture above shows a group of Army medical laboratory technicians and entomologists examining an imported fire ant colony. In the picture below, Army personnel are receiving instructions in imported fire ant survey and identification of mounds.





Table 1.--Summary of Associated Activities, by Program, Fiscal Year 1963

Program	Public meetings attended	Presentations					Feature and news stories	Extent these aids were used				Special reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bulletins	Circulars	Infestation maps and posters	
Burrowing Nematode	8	...	1	...	...	...	...	...	...	35	206	3
Citrus Black Fly	1	...	...	...	2	...	3	...	...	...	...	...
Coop. Economic Insect Survey <sup>1/</sup>	19	14	3	...	...	1	4	...	132	55	33	1
Grasshopper	...	4	2	...	...	...	...	...	...	200	220	...
Hoja Blanca	3	3	...	3	...	...	2	...	...	...	...	...
Imported Fire Ant	348	553	487	129	69	128	144	42	7,454	21,893	1,011	17
Japanese Beetle	28	162	143	10	2	5	3	10	4,396	1,026	569	68
Khapra Beetle	4	2	...	...	1	...	5	...	163	57	...	...
Mediterranean Fruit Fly	5	6	1	...	3	19	4	...	2	400	2	...
Mexican Fruit Fly	...	...	...	...	8	2	1	...	...	...	...	...
Peach Mosaic	...	...	...	...	...	...	...	...	...	...	...	...
Phony Peach	13	15	5	...	1	...	1	...	424	100	...	4
Pink Bollworm	43	38	10	...	11	2	104	...	330	10,300	170	11
Soybean Cyst Nematode	5	38	37	...	...	...	...	2	571	605	202	2
Sweetpotato Weevil	56	90	61	...	9	1	32	38	1,057	4,671	252	...
White-Fringed Beetle	114	322	299	7	8	...	75	36	2,613	2,399	72	56
Wild Cotton	...	...	...	...	...	...	1	...	...	10	...	1
Witchweed	129	342	398	101	6	54	7	18	19,463	4,045	183	4
All Programs <sup>2/</sup>	6	5	1	...	...	...	1	...	...	...	...	...
Total	782	1,594	1,448	250	120	212	387	146	36,650	45,796	2,920	167

<sup>1/</sup> CEIS includes Boll Weevil, Cereal Leaf Beetle, European Chafer, Gypsy Moth, and general insect detection.<sup>2/</sup> Texas only.

Table 2.--Summary of Associated Activities, by State, Fiscal Year 1963

State	Public meetings attended	Presentations					Feature and news stories	Extent these aids were used				
		Talks	Slides	Films	Radio	TV		Exhibits	Bulletins	Circulars	Infestation maps and posters	Special reports
Alabama	158	93	88	18	18	23	34	6	1,000	19,153	157	10
Arkansas	8	47	80	8	...	48	...	6	800	1,950	200	...
Florida	24	13	8	1	3	19	8	...	558	771	256	6
Georgia	158	154	80	22	36	23	113	73	3,383	3,307	344	2
Louisiana	70	66	56	36	7	...	16	18	525	1,570	37	10
Mississippi	15	10	...	17	9	5	52	...	1,520	2,200	553	...
North Carolina	216	532	598	81	10	72	17	12	21,401	3,030	719	6
Oklahoma	21	27	21	...	3	4	4	...	290	8,994	221	...
South Carolina	22	561	500	38	12	7	14	20	3,235	1,769	136	...
Tennessee	12	21	9	11	2	4	4	8	2,832	1,170	32	121
Texas	78	70	8	18	20	7	125	3	1,106	1,882	265	12
Total	782	1,594	1,448	250	120	212	387	146	36,650	45,796	2,920	167

## BARBERRY ERADICATION

Some species of barberries and mahonia are intermediate hosts of a fungus, Puccinia graminis, which causes black stem rust in small grains. Barberry eradication is one phase of a control program against damage to grains from this disease. In the Southern Region, it is entirely a regulatory program and consists of an annual inspection, under the Black Stem Rust Quarantine, of all nurseries and plant sales yards or establishments growing or handling barberry or mahonia plants for interstate shipments. Any rust-susceptible or off-type plants found during this inspection are removed and destroyed. This is to prevent the possible introduction of rust-susceptible nursery stock into States where a barberry eradication program is in progress.

This season certificates were issued to 105 nurseries and 14 plant dealers in the Southern Region.

The following table reflects inspections during the fiscal year.

Table 3.--Barberry Program, Regulatory Activities, Fiscal Year 1963

State	Properties	Inspection for certification	
		Nursery (acres)	Dealers
Alabama	28	4,986	1
Arkansas	6	127	...
Georgia	20	781	...
Louisiana	14	1,569	...
Mississippi	8	595	5
North Carolina	4	115	...
Oklahoma	8	2,393	...
Tennessee	37	5,168	6
Texas	11	1,866	2
Total	136	17,600	14

## CITRUS BLACKFLY

In the United States, the Citrus Blackfly Program consists altogether of survey or detection activities. Surveys for citrus blackfly were conducted by State and Federal personnel again this year in each of the major citrus-producing counties of Texas. Visual inspections were carried on during 10 months of the fiscal year, with no infestations found. These negative results make this the sixth successive year since the last positive finding in 1956. State inspectors assisted in the surveys as time permitted.

During the year, numerous interceptions of citrus blackfly on host material were made by the Plant Quarantine Division at various ports of entry along the Texas-Mexico border. Many of these interceptions of infested materials were near the citrus areas of the Lower Rio Grande Valley. Intensive inspections were made of all backyard and noncommercial citrus in all the border towns and cities. Systematic surveys were conducted, also, in commercial citrus groves along all highways and roads leading to and from Mexico.

There were 70,465 host plants examined on 1,806 properties in the 8 principal citrus counties in Texas. This work was conducted as a specific project. In Florida there were 39,550 host plants on 283 properties examined in 4 of the southernmost counties. This work was incidental to other activities. The finding of this pest in Florida several years ago demonstrated that it is a constant threat in this area.

Inspecting for the citrus blackfly is slow and tedious when the objective is to find a single egg spiral, larva, or pupa on the leaves of citrus trees. For the past several years a speedup method of inspection has been used. This procedure includes spending an average of 5 to 7 minutes on each tree. It is felt that this method has been proved successful, since the same areas have been checked by it for several successive years with negative results.

The speedup method of inspection was used this year at locations believed most susceptible to an introduced infestation of citrus blackfly. In addition, a still faster method was used in areas removed from border stations and thoroughfares. Surveys made by the faster method were done as the inspector walked between two rows observing the trees on each side. By this method, an infestation can be detected at least within a year of its inception and in time to eradicate it with insecticides before it spreads extensively. This new method allows time for adequate coverage of the area usually inspected, as well as of additional areas where inspections have never been made.

In March 1963, eight PPC inspectors from the Harlingen, Texas, District spent 3 days in Mexico observing citrus blackfly infestations around Victoria.



## MEDITERRANEAN FRUIT FLY

The Mediterranean Fruit Fly Program in Florida consisted of two separate phases this fiscal year. The first concerned the successful conclusion of the eradication campaign which was begun during the latter part of fiscal year 1962 and continued through April 1963, and the second concerned a new infestation which appeared during the closing days of fiscal year 1963.

At the beginning of fiscal year 1963, all available resources of both the Federal and the Florida State plant pest control agencies were committed to the eradication of the infestation found in June 1962. During the first 7 months of the period, trapping operations continued to expand; and at the time of the last fly catch, on February 4, 1963, approximately 9,000 traps were in operation in the Broward-Dade-Palm Beach County area. This heavy trap density enabled personnel to pinpoint 41 infestations in the above-mentioned area. Application of bait sprays continued until April 10, 1963; and 723,350 aggregate acres were treated in the three counties from June 1962 through April 10, 1963, which closed this phase of the program. On May 7, 1963, the Mediterranean fruit fly was considered eradicated for the third time. Because of its early detection and the prompt application of control measures, the fly had been contained within the three counties of Dade, Broward, and Palm Beach and had been eradicated before it spread to commercial fruit-growing areas. This was accomplished in a period of less than 1 year and at much less expense than the two previous programs.

The fourth Mediterranean fruit fly introduction was detected in Florida on June 17, 1963. Three adult flies were caught in a Steiner trap in Miami, Dade County, Florida, at a location about three-fourths of a mile east of Miami International Airport. Sixty-three additional specimens (52 of them larvae) were recovered during the remainder of the month, all in the same vicinity.

Because of inadequate funds, the number of Steiner traps in operation in Dade County had been reduced from 3,073 to 2,571 during the week just prior to this outbreak.

As a result of the new invasion, an emergency program was placed in effect on June 18, which involved an increase in the density of traps and the application of spray with ground equipment. Aerial bait spraying began on June 24, with 1,450 acres being treated. By the close of the fiscal year, 2,985 aggregate acres had been treated and the number of traps in Dade County had been increased to 3,373.

An effort again was made to determine the source or route of introduction; but, as was the case with previous infestations, no specific information was obtained.

Trapping operations continued in Louisiana, Mississippi, and Texas, with negative results.

Table 4.--Mediterranean Fruit Fly Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection				Control		
	Locations trapped	Positive specimens	Found infested		Acres treated with insecticide		
			Properties	Acres	Ground	Air	Total
Florida	26,799	49	37	117,880	664	607,378	608,042
Louisiana	60	...	...	...	...	...	...
Mississippi	24	...	...	...	...	...	...
Texas	172	...	...	...	...	...	...
Total	27,055	49	37	117,880	664	607,378	608,042

Table 5.--Mediterranean Fruit Fly Program, Regulatory Activities, Fiscal Year 1963

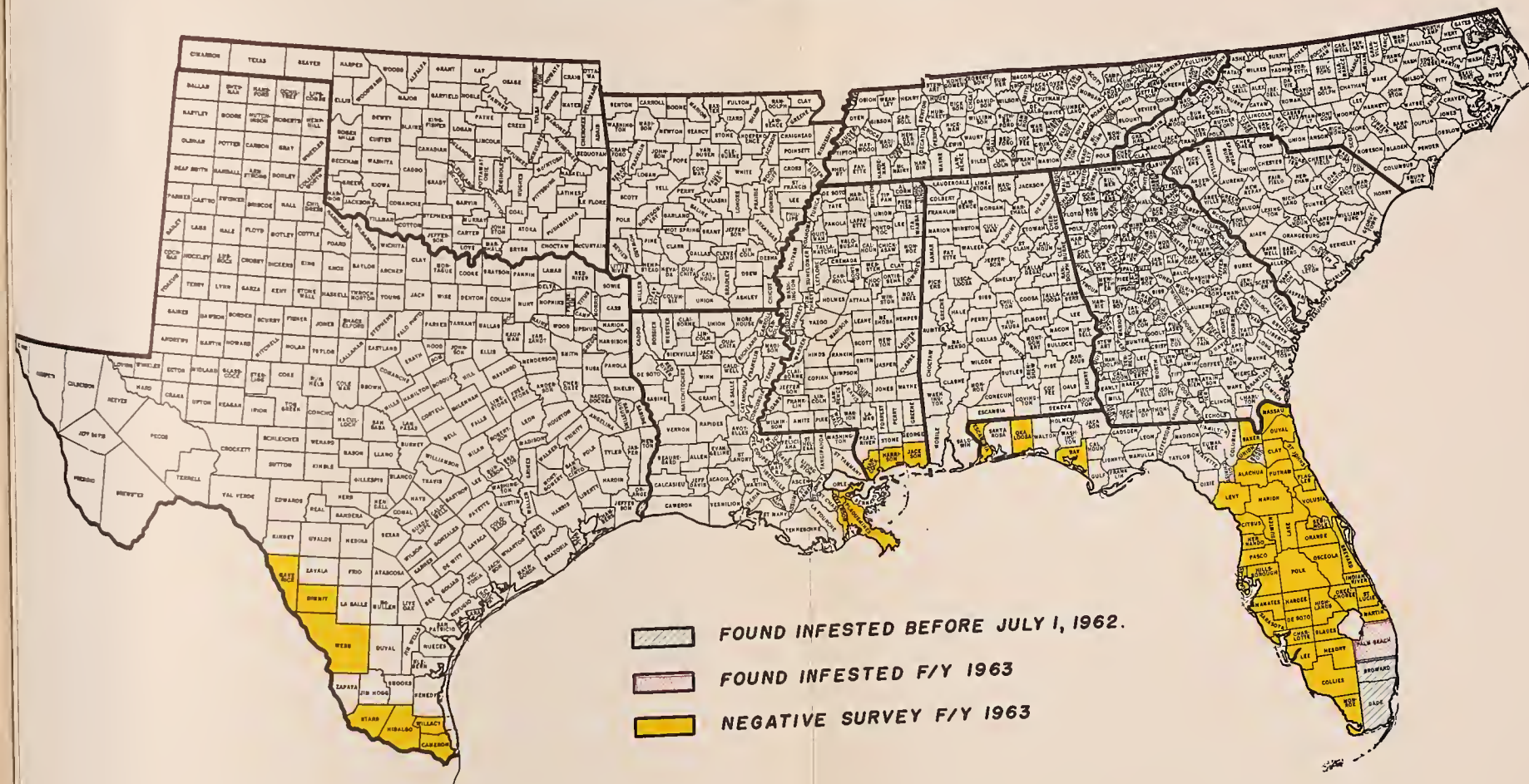
State	Regulatory							
	Inspection for certification				Acres treated for certification purposes (soil)	Commodity lots treated		
	Properties	Processing plant visits	Shipping point visits	Other		Fumigated	Other	Total
Florida	2,582	550	147	2,681	54	113,087	2,796	115,883
Total	2,582	550	147	2,681	54	113,087	2,796	115,883







## MEDITERRANEAN FRUIT FLY





## MEXICAN FRUIT FLY

The Mexican fruit fly, although it does not survive the summers in Texas, reestablishes infestations there each fall by migration from northeastern Mexico. The program in the Southern Region consists primarily of regulatory measures designed to prevent spread of the insect to favorable habitats within the continental United States.

During the summer months of 1962, there were 200 traps left in use in Cameron, Hidalgo, Starr, and Willacy Counties, Texas. No Mexican fruit flies were trapped during that period. By the time the 1962-63 harvesting and shipping season officially opened on October 1, 1962, there were 2,100 traps in use within the regulated area. No traps were operated this year in Brooks and Webb Counties because the 1962 freeze killed nearly all the commercial citrus. On December 1, the number of traps was reduced by half. After that date, all citrus shipped to the States of Arizona, California, and Florida must be fumigated and trap operations are no longer a basis of certification. All traps were taken out of use at the end of the fiscal year.

The first positive specimen of the trapping season was taken December 6, 1962. The last one trapped was on April 10, 1963. One larval infestation was found on April 26, 1963. These dates are about average over the past years. During the fiscal year, 54 Mexican fruit flies were trapped in Cameron, Hidalgo, Starr, and Willacy Counties. No flies were taken in the Winter Garden area of Dimmit County. There were 65 positive specimens trapped during the 1962 fiscal year.

Regulatory activities were comparatively light as a result of a very short citrus crop following the January 1962 freeze. Many of the packing houses did not operate this year. Because of a light infestation of the Mexican fruit fly, the treatment period for grapefruit shipped to southern States again was extended from March 1 to April 1. This year's citrus crop in Texas amounted to an estimated 2,800,000 boxes, most of which had been harvested by April 1. In the treatment of 5,501 boxes of grapefruit and oranges, 62 fumigations were supervised.

The volume of Mexican citrus imported into the United States was the largest ever recorded. Texas citrus shippers imported more than three million units, ranging in size from 10 to 90 pounds per unit. This fruit was fumigated in Mexico under the supervision of the Plant Quarantine Division. Much of it was handled under Quarantine 64 when shipped from Texas to restricted areas under certificate; but when kept free of contamination, no further treatment was necessary.

McPhail traps were operated at a detection level in other States. In Florida, they were operated in conjunction with the Mediterranean fruit fly survey.

Table 6.--Mexican Fruit Fly Program, Survey and Regulatory Activities, Fiscal Year 1963

State	Survey and detection				Regulatory						
	Surveyed		Found infested		Inspection for certification					Commodity lots fumigated	
	Properties	Locations trapped	Positive specimens	Properties	Acres	Properties	Acres		Processing plant visits		Other
Florida  Texas	...	248	...	...	...	...	...	...	...	...	...
	19	1,312	54	31	810	145	...	21,404	592	51	62
Total	19	1,560	54	31	810	145	...	21,404	592	51	62

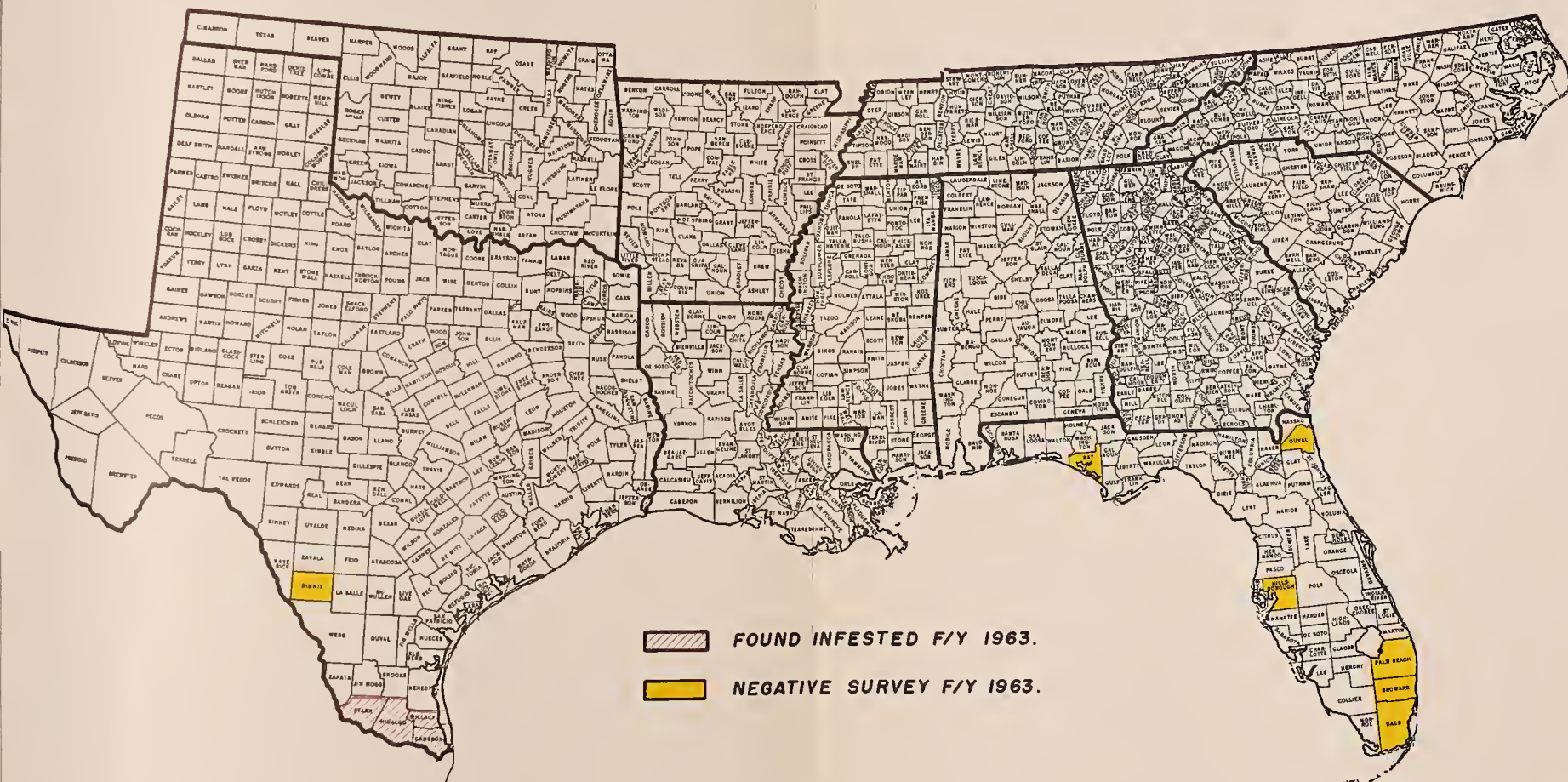


EL PASO



UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
SOUTHERN REGION

MEXICAN FRUIT FLY





## COOPERATIVE ECONOMIC INSECT SURVEY AND DETECTION

This program is cooperatively financed by the Plant Pest Control Division and the cooperating States. It provides a system for channeling information concerning new pest introductions or unusual population buildups of native pests to a central point for consolidation, editing, and rapid distribution to all interested agencies and workers. More important, however, it provides a central point for coordination of national pest survey efforts. The program involves both special population abundance surveys for a species, or species complex, in a given area and detection surveys in which the objective is to determine the presence or absence of a particular species of economic importance. Population abundance surveys were conducted during fiscal year 1963 by Division personnel or by the State survey entomologists on beet leafhopper and potato psyllid, boll weevil, Cuban May beetle, European chafer, golden nematode, and gypsy moth.

Seven States continued participation in the program on a formal basis and four participated informally. Annual summaries of insect conditions were submitted for national distribution by all except one State, and most of the States furnished reports on monetary losses due to insect pests. Two States held insect detection workshops. Additional emphasis was placed on increasing the number of hosts under surveillance in each State and increasing the percentage of reports containing numerical population data.

Following are summaries of abundance or detection surveys conducted during the year.

### Beet Leafhopper and Potato Psyllid (Texas and New Mexico 1963)

The annual survey for these two pests again was made in southwest Texas and southeast New Mexico to determine the density, development, and distribution of both pest and host. Surveys began on March 4, 1963, and continued through March 20 for the beet leafhopper and through March 29 for the potato psyllid.

Beet leafhopper numbers were found to be several times greater this year than last. This overall increase was the result of heavy population buildups in the area bounded by the Texas towns of Crystal City, El Paso, and Monahans, where 83 percent of all Texas hoppers were found. Temperatures throughout February were conducive to uniform growth and an abundance of host plants. As a result, host plants were numerous and in better condition than usual along the entire Texas survey route. Altogether, 90 percent of the sites examined contained hosts and 83 percent had leafhopper infestations. In the Texas survey, 392 beet leafhoppers were recovered from the 4,550 square feet sampled. This was an average of 8.6 per hundred square feet, as compared to 3.9 per hundred square feet found in 1962.

In New Mexico, beet leafhopper populations amounted to 6.7 per hundred square feet, which is a slight increase over last year. Very little population shift was observed in this State.



Temperatures in early March were not conducive to vigorous growth of wild Lycium, and the potato psyllid survey was delayed in the El Paso area until the latter part of March. With this exception, the 1963 survey team found wild Lycium to be in good condition in all areas surveyed; and upon returning to the El Paso area in late March, they found this host more abundant than usual. A large part of the host plants had full foliage. Although potato psyllid populations were higher at all locations this year, they still were not alarming. Psyllid eggs were noticed at every location but in small numbers. Apparently, reproduction again was retarded.

### Boll Weevil

For several years boll weevil hibernation surveys have been made in a number of the Southern States. These surveys have been in cooperation with the State Experiment Stations and the Entomology Research Division of the U. S. Department of Agriculture. The information obtained from these surveys is used for research purposes and for population evaluation studies. These surveys will probably continue throughout the foreseeable future.

In 1953, it was found that the boll weevil had moved westward and was present in the Presidio Valley in the Big Bend section of west Texas. Each year the damage from the weevil in this area increased, indicating that the boll weevil was adapting itself to semiarid conditions and, therefore, unless checked, might be expected to continue its migration into the El Paso Valley, New Mexico, Arizona, and California. In 1960, an extensive survey was made of the area. The infestations were found to extend into the eastern limits of the El Paso Valley. A cooperative program was instigated to determine the feasibility of eradicating the weevil along the western fringe of the area. The work was begun in 1960 and progress has been satisfactory.

On September 10, 1962, survey crews found the first weevil in the El Paso, Texas, area. Eight days later another new infestation was found. Following these findings, State and Federal inspectors expanded survey activities to delimit the infestations. The survey indicated that approximately 196 acres were infested in this section. The El Paso Cotton Growers Association and the Division treated both infestations. Treatments were made with Sevin or methyl parathion, furnished by the Division. The Cotton Growers Association applied from four to six treatments with these materials between October 6 and November 9, 1962, and treated 1,021 aggregate acres. Survey crews re-entered the treated areas on May 15, 1963, and at the close of the fiscal year no boll weevils had been found. However, in an effort to assure eradication, a second program with ground-treating equipment was started when plants began squaring. All of the previously infested acreage, as well as some additional acreage, was treated at 5-day intervals during the period June 3 to July 3, 1963.

To determine whether the boll weevil was overwintering in the El Paso section, 10 hibernation cages with weevils were installed and early plantings were made for trap crops. No emergence occurred in the cages and no weevils were found on the trap crops. Only a limited amount of low quality material was available for this study; therefore, the results of the cage work are not considered conclusive.



In the Big Bend area of Texas, surveys revealed that the boll weevil had moved up the Rio Grande River from Presidio to Indian Hot Springs. These surveys also indicated that the boll weevil overwintered as far up the River as the Moody Bennett section. As a result, the 1962 fall treatment program was modified to include all host fields on both sides of the River from Ruidosa to the northernmost infestation. Initially, the Moody Bennett area on both sides of the River was treated on a weekly basis and the remainder of the area on a 2-week basis. Later, most of the area was placed on a weekly treatment schedule and received applications of methyl parathion by aircraft between September 25 and December 2, 1962.

In January 1963, hibernation surveys were made in the treated and untreated areas along the Rio Grande River. One boll weevil was recovered in the treated area on the Mexican side of the River in the Moody Bennett section, and 19 boll weevils were found in sections outside the treated areas.

Surveys in the Presidio and Upper Big Bend sections began in May 1963; and at the close of the fiscal year, some fields in the immediate vicinity of Presidio were found to be as much as 50 percent infested. In the treated area, however, no boll weevils were found.

In the Lubbock, Texas, area, surveys were initiated to determine whether boll weevils overwintered or could establish themselves above the Caprock of the South Plains. Surveys covering a 23-county area began on May 20 and were completed May 29. No weevils were found above the Caprock, but weevils which had overwintered were found in Dickens, Stonewall, Haskell, Fisher, and Jones Counties.

Table 7.--Boll Weevil Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection			Control			
	Surveyed	Found infested		Insecticide treatment			
	Properties	Properties	Acres	Properties	Acres		
					Ground	Air	Total
Texas	1,026	77	2,886	139	2,924	8,139	11,063
Total	1,026	77	2,886	139	2,924	8,139	11,063

### Cereal Leaf Beetle

In the survey program for cereal leaf beetle, particular emphasis was given to those States along the northern edge of the Region because of their proximity to the Indiana-Michigan infestation. Since this beetle is so destructive to grains and is so well adapted to long-range spread as a hitchhiker, it is important that its presence be detected immediately so that prompt control measures may be instituted.

During this fiscal year, seven inspectors from this Region were sent to the Central Region for several weeks of training in cereal leaf beetle survey and control, and one member of the Regional office staff was detailed there to assist in the planning phases of the regulatory treatment program. Upon returning to their respective stations in late May, inspectors immediately began a survey of small grains and corn. Survey in Texas covered the greatest area and included 1,177 properties; but the most intensive survey was conducted in South Carolina where 583 properties were surveyed in 5 counties. There were 411 properties surveyed in North Carolina, 262 in Tennessee, 40 in Florida, and 31 in Georgia. No cereal leaf beetles were found.

### Cuban May Beetle

Survey in Florida for the Cuban May beetle was greatly curtailed during the fiscal year because of the outbreak of the Mediterranean fruit fly in 1962 and 1963.

It is not known definitely whether the area in Florida infested with the Cuban May beetle has increased over that of last year, as very little delimiting has been accomplished. So far as is known, infestation is confined to an area of approximately 400 square miles in the Greater Miami section of Dade County. The insect appears to be spreading very gradually year after year, primarily by its flight. Control treatments are applied in the vicinity of the airport in order to prevent spread through the movement of aircraft, especially those being loaded at night. No Cuban May beetles have been reported as yet, either in or on aircraft carrying passengers or cargo. Surveys for the pest conducted at other major southern airports further substantiate the belief that it is not carried by aircraft, as no beetles have been found at these locations.

Suppressive treatments were applied to preferred hosts, including Trema mollis, at the Miami International Airport and environs. Weekly treatments began on May 16, 1963, and consisted of complete wetting of foliage with DDT spray mixed at a rate of 2 quarts of 25-percent emulsifiable concentrate in 100 gallons of water. Followup survey indicated that the adult population of the beetle was greatly reduced. Because of the urgent nature of the Mediterranean Fruit Fly Program, work on the Cuban May beetle was terminated June 19, 1963. Plans had been made to apply six weekly treatments; however, when the work was terminated, only four complete treatments had been applied, with the fifth application under way.

Investigations of larvicides and of the life history, habits, and economic importance of the pest are continuing at the Homestead, Florida, Experiment Station, under the direction of Dr. D. O. Wolfenbarger.

### European Chafer

Black light traps again were operated in the four States of North Carolina, South Carolina, Tennessee, and Arkansas, primarily for European chafer, and in other States for general survey purposes, with all operators being cautioned to be alert for this species when screening trap catches. Sixty-three black light traps were used during F. Y. 1963, but no specimens had been caught.

### Golden Nematode

Golden nematode surveys were conducted in Alabama, Florida, Georgia, South Carolina, and Texas.

In most cases, surveys were limited to the potato-producing areas where grader dirt samples were collected from potato sheds. In addition to the grader samples, those States taking soil samples for soybean cyst nematode survey screened samples for golden nematode if fields had been planted previously to potatoes. In Georgia, samples were collected from 16 properties growing commercial tomato plants. No golden nematode was found.

Table 8.--Golden Nematode Program, Survey and Detection, Fiscal Year 1963

State	Surveyed		Samples collected	Positive specimens
	Properties	Acres		
Alabama	123	2,353	150	...
Florida	12	300	12	...
Georgia	16	430	16	...
South Carolina	41	4,500	132	...
Texas	20	1,310	73	...
Total	212	8,893	383	...



## Gypsy Moth

Trapping for the gypsy moth continued this year on an increased scale. Except in North Carolina, the number of traps and the number of counties trapped were increased in all States. One new State, Oklahoma, was added to the list of those maintaining traps. At the end of the fiscal year, there were 108 locations being trapped in 11 counties in Arkansas, 102 in 9 counties in Georgia, 128 in 16 counties in Mississippi, 58 in 19 counties in Oklahoma, and 193 in 43 counties in Tennessee.

Traps were located in hardwood areas near those points most vulnerable to infestation, such as heavily traveled highways. Traps again were operated in most areas in conjunction with the Japanese beetle trapping program. No gypsy moths were caught.

## Hoja Blanca

Hoja blanca (white leaf) is a destructive disease of rice, spread by the insect vector, Sogatia orizicola Muir. The first infestation of hoja blanca found in the United States was near Belle Glade, Palm Beach County, Florida, in 1957. Later, infestations were found in Hancock County, Mississippi, and in certain sections of the rice-growing area in Louisiana. Each time the disease or the vector has been found in this country, an eradication program has been initiated.

During fiscal year 1963, the vector was found in both Louisiana and Florida. It was discovered in Iberia Parish, Louisiana, on July 16, 1962, the first time a hopper had been found in the State since 1959. Immediately after this discovery, a survey program was expanded to include the entire Louisiana rice-growing area. This resulted in the survey of some 167,732 acres of rice on 1,722 properties. Inspections were conducted in 22 south Louisiana rice-growing parishes. During the year, the vector was found on 5,335 acres on 34 properties in 7 parishes; namely, Evangeline, Iberia, St. James, St. John the Baptist, St. Martin, St. Mary, and Vermilion. All infested properties were treated soon after the vector was discovered. Repeat applications were made on 6,927 acres, making an aggregate total of 14,741 acres treated.

Both the disease and the vector were found again in the area near Belle Glade, Florida, in June 1963, although confirmation was not received until after July 1. The infestation occurred on approximately 300 acres. An eradication program was undertaken immediately; and at the close of the report period, treatment was still in progress.

All surveys in Mississippi were negative. Observations were made in the previously infested areas in Hancock County; however, no rice has been grown there in recent years. Both sweeping and trapping were done in the rice section of the Delta.

In Arkansas, surveys were conducted in major rice-growing counties with negative results. In Texas, intensive surveys for the vector were carried out in cooperation with the Texas Department of Agriculture and the Texas

Extension Service in all the rice-producing counties of the State. All results were negative.

Table 9.--Hoja Blanca Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection				Control	
	Surveyed		Found infested		Insecticide	
	Properties	Acres	Properties	Acres	Treated by air	
					Properties	Acres
Arkansas	8	635	...	...	...	...
Florida	5	27	...	...	...	...
Louisiana	1,722	167,732	34	5,335	110	14,741
Mississippi	23	3,512	...	...	...	...
South Carolina	8	416	...	...	...	...
Texas	344	48,748	...	...	...	...
Total	2,110	221,070	34	5,335	110	14,741

### Khapra Beetle

Activities on the Khapra Beetle Program in the Southern Region during the fiscal year 1963 have been confined entirely to survey. Detection surveys have been conducted throughout the Region, with particular attention being devoted to all coastal areas and areas where khapra beetles have been found previously.

In Alabama, special attention was given to inspection of peanut and import warehouses and of railroad cars used to transport grain from the West and Midwest in the emergency feed program.

Khapra beetles were found again this year on ships visiting Florida's port facilities. This demonstrates the vulnerability of Florida as a likely point of introduction of the pest because of the considerable amount of traffic occurring between Florida and foreign countries known to be infested with the insect.

Intensified surveys were conducted in the El Paso and Panhandle sections of Texas, where khapra beetles have been found previously. Some farm and ranch inspections were made in the Lubbock District in counties lying close to the New Mexico State Line where previous infestations are known to have occurred. During the course of these inspections in Texas, more than 100 lots of specimens were collected from various locations and submitted for identification. All have been negative.

In the remaining States, surveys for this pest were incidental to other program activities. Feed and seed stores and warehouses; grain processing, handling, and storage establishments; feed storage areas of dairy and poultry farms; railroad cars; and other places of potential hazard were inspected during periods unfavorable for outside work on other programs or in connection with other surveys. During the year, 4,454 properties in the Southern States were inspected for khapra beetle, as follows:

Alabama	321	Louisiana	239	South Carolina	81
Arkansas	219	Mississippi	176	Tennessee	114
Florida	46	North Carolina	254	Texas	2,907
Georgia	13	Oklahoma	84		

All surveys were negative. This is the third year since this serious pest of stored grain has been found in the Southern Region.

This year the Plant Pest Control Division and the Plant Quarantine Division cooperated in cleaning up parts of two cargoes of hazardous material. The first cargo involved some 500 bales of cotton bagging from India which were unloaded at Savannah, Georgia, in October 1962 and subsequently moved to the Julius Friedlaender Company warehouses at Columbus, Georgia. Later, the ship and its cargo were found to harbor khapra beetles. The section of the Friedlaender warehouse in which the contaminated bagging was stored was placed under quarantine immediately and fumigated, and the railroad cars used in the movement of this material to Columbus were traced and treated. The second hazardous shipment involved cotton goods from Pakistan, consigned to the Pepperell Manufacturing Company of Opelika, Alabama. These materials were located and held in quarantine until arrangements could be made for proper treatment.

Excellent cooperation has been received on this program from storage operators and other property owners or managers, and from State and other Federal personnel. During the longshoreman's strike, Plant Quarantine Division inspectors were assigned to assist in surveys in the Houston and Beaumont, Texas, areas.

### Whitefly

The whitefly, Dialeurodes kirkaldyi (Kotinsky), was found in the United States for the first time on November 8, 1962. This first collection was made by an inspector of the Florida Division of Plant Industry from a dioscorea plant at the U. S. Naval Base in Key West. It was forwarded in a collection of other whiteflies to the Insect Identification and Parasite



Introduction Research Branch, Beltsville, Maryland, where it was positively identified.

The known distribution of the pest prior to this time included Hawaii, British Guiana, Egypt, India, and Syria. In addition to citrus, other known hosts are Beaumontia grandiflora, Arabian jasmine (Jasminum Sambac), Morinda citrifolia, and furry jasmine (Jasminum multiflorum). In Florida, the preferred host seems to be jasmine, especially the Rose, Star, Confederate, and Grand Duke varieties.

On May 15, 1963, the Florida Division of Plant Industry and the Plant Pest Control Division expanded survey activities to determine the distribution of the pest. It was found immediately in many places on Key West; and by the end of May, confirmation was received of specimens found at Marathon Key, Key Vaca, and Coral Gables. By June 5, the pest had been found also at Fort Lauderdale, Pompano Beach, and Deerfield Beach, Florida.

In view of the wide distribution revealed by this survey, crews were removed from the assignment and returned to their regular duties on June 6. The species apparently is well established in Florida, and observations on its occurrence and importance are now being made in conjunction with routine activities.

## GRASSHOPPER

In the traditional grasshopper trouble spots of northwest Texas and Oklahoma, Division activities were limited entirely to survey and county agent contacts. Because of light or scattered grasshopper infestations and insufficient rancher interest, no organized grasshopper control program on rangeland was undertaken. Grasshopper problems in Arkansas were limited to crop margins in scattered areas.

Surveys which began in mid-July 1962 and ended in late August revealed that the adult grasshopper population was high enough to produce sufficient eggs to infest economically about a quarter of a million acres of short grass rangeland in Texas and Oklahoma the following spring. This acreage was not in a block but was scattered over 20 counties near the common border of the two States.

Limited observations in the late fall indicated that conditions were good for the overwintering of grasshopper egg pods but that some 10 to 15 percent of the pods had been destroyed by predators or natural enemies. Small flights of Melanoplus sanguinipes, the lesser migratory grasshopper, were noted and some marginal damage to fall-seeded cereal grains was observed.

Dry turf conditions existed throughout the panhandle areas during the winter and early spring, but warm temperatures caused hatching of eggs in late May. Egg hatch was complete by mid-June. Growth of range grass and weeds, associated with the early June rainfall, helped hide the populations of young, newly hatched nymphs. Ranchers, therefore, were not too concerned with grasshoppers.

Extensive nymphal surveys were conducted in those areas of expected economic infestation; but at the close of June, the quarter of a million acres of range found infested the previous summer had decreased approximately 80 percent.

Very little change was noted in the species complex of the infested areas. Phlibostroma quadrimaculatum, while no longer considered the dominant species, appears to be more widely dispersed. Ageneotettix deorum and Amphitornus coloradus were the predominant range species. M. sanguinipes was often the dominant species in crop margins and idle lands.

## IMPORTED FIRE ANT

The fiscal year 1963 has seen the Imported Fire Ant Program over the hump as far as residue problems, flagged-out areas, and battles with conservation societies are concerned. The imported fire ant bait developed in the Methods Improvement laboratories is doing the work that is needed while eliminating the problems that plagued the program so severely during the first few years it was in operation.

Because of the demonstrated effectiveness of the material and its elimination of the most perplexing problems of the program, public confidence in the work has been restored and the interest of cooperators has been renewed. Larger appropriations than ever before are being sought and obtained by State and local agencies; and States which, for lack of funds, have been largely out of the Imported Fire Ant Program are coming back in with renewed interest in the job. Last year it was reported that Mississippi and Alabama again had appropriated money for the program; this year, Florida and South Carolina, also, have made funds available for this work. Today more States have more money with which to cooperate in the Imported Fire Ant Program than ever before in the history of this work.

Acreage treated in Mississippi during fiscal year 1963 showed an increase of more than 300 percent, or 340,620 acres this year as compared with 79,045 acres in fiscal year 1962. Treatment in Alabama was more than doubled, with 100,924 acres treated in 1963 as compared with 46,368 during fiscal year 1962.

Delimiting surveys have been conducted around the periphery of all infestations, and scouting inspections have been made in all neighboring counties and parishes in noninfested portions of all the States in the Southern Region. As a result, infestations were found for the first time in 23 counties in 7 of the 9 infested States as follows: 1 in Arkansas, 2 in Florida, 10 in Georgia, 4 in Mississippi, 1 in North Carolina, 1 in South Carolina, and 4 in Texas.

The new infestation in Arkansas is in Ashley County, just east of Union County and adjoining Morehouse Parish in Louisiana on the south. All of the infestation in the county is along the southern boundary and it has been treated in its entirety. A program is now under way to eradicate the ants in Morehouse Parish, which should be of much assistance in clearing up and preventing the recurrence of the Ashley County infestation.

In Florida, new infestations were found in Alachua and Hernando Counties. The infestation in Alachua County was found on the University campus at Gainesville and consisted of approximately 1 acre which was immediately treated. The infestation in Hernando County is along the Pasco County line and resulted from natural migration.

In Georgia, control applications were made to some 727,902 aggregate acres. All known infestations in 9 counties had been treated by the end of June.



Infestations comprising 131,503 acres were found in 10 counties not previously known to be infested. Most of the newly found area consisted of extensions to known infestations as a result of natural spread.

In Louisiana, no new parishes were found infested. Approximately 567,000 acres were treated in the State, the largest acreage treated in a single year since the beginning of the program. Treatment of all the known infested acreage in seven parishes was completed.

This year, for the first time, imported fire ants were found in Cumberland County, North Carolina, in an infestation which included 679 acres in the city of Fayetteville. The entire infested acreage was treated. It has been 4 years since imported fire ants were found in Mecklenburg and Robeson Counties, and treatment is complete on all known infested acreage in Brunswick and Pamlico Counties.

Imported fire ant infestations were found on some 500 acres in Beaufort County, South Carolina, this year. Treatment apparently is complete in Aiken, Clarendon, Dillon, Edgefield, Florence, Lexington, Marion, Richland, and Spartanburg Counties, and control work is being stepped up in the other infested counties in the State.

In Texas, infestations were found in Colorado, Polk, Sabine, and Wharton Counties for the first time. At the close of the year, all known infestations had been treated in Sabine, plans had been completed for the treatment of Colorado and Wharton, and arrangements were being made for Polk. In other parts of the State, the work is progressing satisfactorily, although somewhat hampered by the lack of cooperator funds.

In the confines of the generally infested area, surveys were made at regulatory points in connection with the quarantine program. In addition, appraisal surveys were made in all treatment blocks to determine the effectiveness of the treatment. This in itself is a time-consuming job, but one that must be conducted punctually and effectively if the treatment program is to be successful. It is from these appraisal surveys that much of the optimism about the bait treatment stems. In most instances, 95 percent or more of the mounds are eliminated by a single treatment, and in very few instances will anything other than limited spot work be required to complete eradication in an area.

Voluntary inspection has played a big part in the detection of new infestations. Through the cooperation of county agents and teachers of vocational agriculture, there has been more thorough inspection of rural areas around the periphery of the infestation and in lightly infested areas than ever before. This plan of survey has worked well in Alabama, Arkansas, Louisiana, and Mississippi and is gaining momentum in other States.

Overall, the progress has been good this year, with an aggregate total of 1,857,994 acres having been treated.

The quarantine was revised during the year to include additional infestations; regulatory practices, as they relate to the handling of practically all articles, have been standardized in the States concerned; and much progress has been made in the treatment of points hazardous from the standpoint of spreading this pest.



One regulatory problem associated with the Imported Fire Ant Program is the movement of stumpwood from infested fields to processing plants outside the regulated areas. The principal danger is the movement of queen ants during the mating flights. To avoid this hazard, stumpwood is required, during certain seasons of the year, to be dusted with 10 percent heptachlor while it is being loaded.



Imported fire ant mounds may be found under a variety of conditions. The pictures below show how spread may occur naturally through movement in water.



An imported fire ant colony which has been overrun by flood waters drifts toward land farther down the river.



The reassembled colony comes out on land and begins reestablishing its mound, and a new infestation is started.



Heavy infestations of imported fire ants in cultivated areas are hazardous to crops.



The first planting of corn in a 60-acre field in Mobile County, Alabama, was completely destroyed and, as shown above, the second planting was damaged an estimated 50 to 60 percent.



Imported fire ant damage to a young cabbage plant—one of many transplants which are attacked and killed by this pest.

Most of the mirex granular bait used in the Imported Fire Ant Program is applied with multi-engine aircraft equipped with a spreader similar to the one pictured below. Loading is accomplished with a mechanical loader having a capacity of at least 800 pounds per minute. The overall swath is usually 100 feet or more.

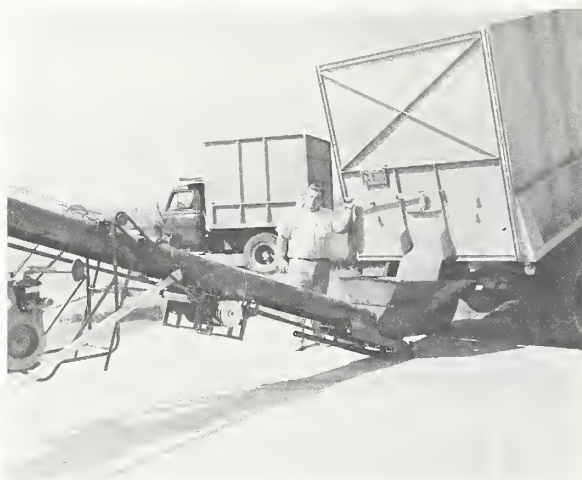
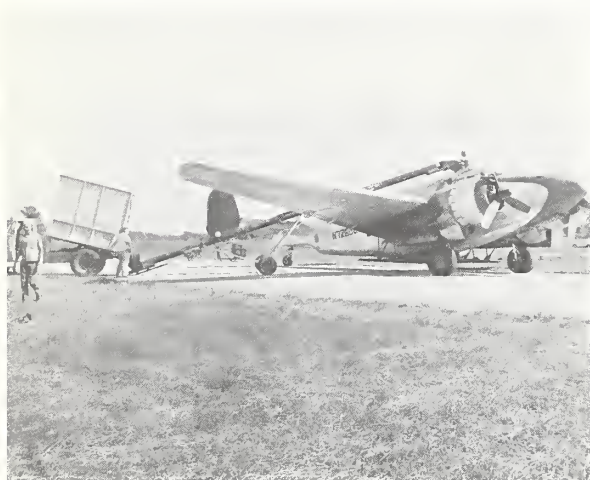


Table 10.--Imported Fire Ant Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection				Control				
	Surveyed		Found infested		Acres treated with insecticide				
	Properties	Acres <sup>1/</sup>	Properties	Acres	Chemical		Bait		Total
					Ground	Air	Ground	Air	
Alabama	7,555	...	1,449	63,234	27,309	213	591	72,811	100,924
Arkansas	21,563	...	55	7,292	1,745	...	...	2,250	3,995
Florida	4,276	...	163	31,592	730	...	90	15,400	16,220
Georgia	21,589	...	7,113	1,776,940	2,195	...	3,439	722,268	727,902
Louisiana	59,595	3,021,979	44,555	2,244,336	20,027	159,817	14,777	372,607	567,228
Mississippi	24,980	...	3,971	475,688	81,943	...	17,805	240,872	340,620
North Carolina	73,588	...	719	102,836	992	...	9,437	19,340	29,769
Oklahoma	259	...	...	...	...	...	...	...	...
South Carolina	33,246	...	706	120,066	2,170	...	2,440	21,730	26,340
Tennessee	41,008	...	...	...	...	...	...	...	...
Texas	26,489	...	...	1,145,493	31,620	5,764	4,992	2,620	44,996
Total	314,148	3,021,979	58,731	5,967,477	168,731	165,794	53,571	1,469,898	1,857,994

<sup>1/</sup> The reporting of "acres surveyed" on Imported Fire Ant Program is optional (by State).

Table 11.--Imported Fire Ant Program, Regulatory Activities--Inspection for Certification  
Fiscal Year 1963

State	Inspection for certification						
	Properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Other
		Nursery	Other				
Alabama	1,930	9,414	12,716	34	142	369	7,314
Arkansas	2	2	...	...	...	...	...
Florida	1,989	896	21,400	214	976	827	...
Georgia	250	1,020	38	2	43	43	2
Louisiana	665	8,422	13	9	27	57	15
Mississippi	993	3,481	4,790	2	137	391	109
South Carolina	23	59	...	...	...	...	...
Texas	768	2,723	234	3	1	...	199
Total	6,620	26,017	39,191	264	1,326	1,687	7,639

Table 12.--Imported Fire Ant Program, Regulatory Activities--Certification and Commodity Treatment  
Fiscal Year 1963

State	Acres treated for certification (soil)	Commodity lots treated					Total
		Fumigated	Dipped	Soaked	Heated	Other	
Alabama	4,288	99	131	...	27,099	660	27,989
Arkansas	28	...	...	...	...	...	...
Florida	1,314	...	...	...	...	1	1
Georgia	551	2,319	1,996	2	659	3,168	8,144
Louisiana	984	2	2	...	...	11	15
Mississippi	585	66	...	...	...	10,508	10,574
North Carolina	...	28	...	...	...	...	28
South Carolina	3	...	...	...	...	...	...
Texas	140	...	...	...	...	14	14
Total	7,893	2,514	2,129	2	27,758	14,362	46,765



Table 13.--Imported Fire Ant Program, Regulatory Activities--Commodities Treated  
Fiscal Year 1963

Commodities	Lots treated							Total
	Alabama	Florida	Georgia	Louisiana	Mississippi	N. Carolina	Texas	
Nursery Stock	131	...	1,938	3	...	...	14	2,086
Cotton Products	...	...	...	1	...	28	...	29
Transport	...	1	...	...	...	...	...	1
Soil	27,848	...	5,914	11	66	...	...	33,839
Transplants	...	...	60	...	...	...	...	60
Machinery and Equipment	...	...	202	...	10,508	...	...	10,710
Other	10	...	30	...	...	...	...	40
Total	27,989	1	8,144	15	10,574	28	14	46,765

Table 14.--Status of Imported Fire Ant Program, June 30, 1963

State	Estimated acres found infested from beginning of program	Acres treated		Estimated acres remaining to be treated <sup>1/</sup>
		Complete treatment from beginning of program through 6-30-63	First application only of two-application treatment	
Alabama	7,706,424	645,937	...	7,060,487
Arkansas	91,971	80,674	11,297	11,297
Florida	2,097,262	298,958	...	1,798,304
Georgia	6,205,468	1,824,349	53,893	4,381,119
Louisiana	8,259,183	1,574,684	30,033	6,684,499
Mississippi	4,116,052	586,727	38,857	3,529,325
North Carolina	123,982	48,762	...	75,220
South Carolina	339,195	94,195	...	245,000
Texas	1,993,467	209,158	8,804	1,784,309
Total	30,933,004	5,363,444	142,884	25,569,560

<sup>1/</sup> Includes acres which have received no treatment, and those which have received the first application only of the two-application treatment.

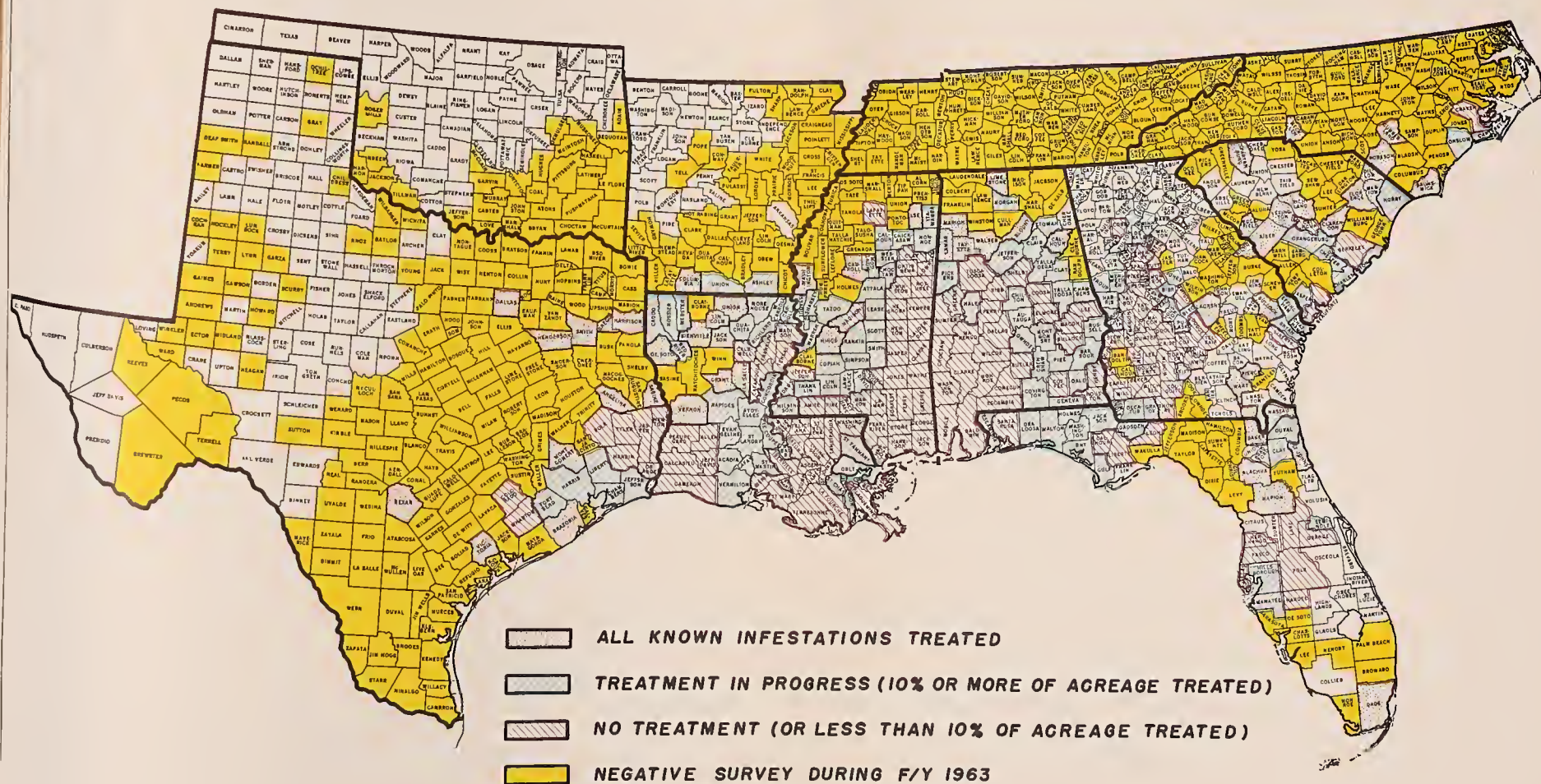






UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
 SOUTHERN REGION

IMPORTED FIRE ANT





## JAPANESE BEETLE

The survey phase of the Japanese Beetle Program consists of intensive trapping, to the extent that funds will permit, along the periphery of the regulated area, with a decreasing number of traps in other parts of the Region. This is supplemented by visual inspections and checking of terminating plane flights originating in hazardous airports. Control work consists of maximum suppression or, if possible, complete eradication of isolated infestations far removed from the regulated area, if such situations occur. Regulatory work involves, principally, the certification of fresh fruits and vegetables for movement to markets and canneries, and of nursery stock and soil sample shipments. Nurseries in the Federally regulated areas are treated with dieldrin for certification purposes.

Small outbreaks of Japanese beetles have been found in eastern Tennessee for several years. In most cases, an intensive trapping program has revealed the presence of these infestations soon after their establishment, and it has been possible to treat them and keep the populations at a very low level. The risk of spread from such situations is believed to be minor. Should there be a succession of years particularly favorable for the development and intensification of beetle populations in eastern Tennessee, it might become necessary to establish a quarantine line, as has been done in many other States; but thus far, excellent control is being maintained. Although more intensive trapping was conducted throughout the State during fiscal year 1963 than in 1962, only 685 acres were found infested this year as compared with more than 32,000 acres found last year. Also, during fiscal year 1963, only 14,421 acres required treatment for Japanese beetles, as compared to more than 40,000 acres the year before. No large acreages were found in any county; whereas, the previous year, large acreages were found in several localities. A few single adult finds were made in some counties, but in most instances, these were thought to be hitchhikers.

During the last half of the summer of 1962, heavy intensification and moderate local spread were observed in the infestations in Ashe and Watauga Counties, North Carolina, and at Dahlonga, Georgia. Milky disease spores, furnished by cooperators, were applied to some 800 acres in Ashe and Swain Counties, North Carolina; and late in the fiscal year, there was some indication of a population reduction in a few areas of heavy infestation in the vicinity of Asheville and Hendersonville, North Carolina. Some intensification and spread were noted in the vicinity of Columbia, South Carolina, and Augusta, Georgia.

Plane inspections were carried on at the terminating points of commercial flights originating or stopping during beetle flight hours at airports declared to be hazardous. One live adult Japanese beetle was taken at Amon Carter Field, Fort Worth, Texas, on August 8, 1962, from the passenger compartment of an American Airlines plane originating in Cleveland, Ohio. During the spring of 1963, these examinations were made on a spot basis and included some 10 percent of the flights. Results of these checks indicate that the micronized DDT dust used in treating aircraft landing at or departing from hazardous airports is very effective.



There were no significant catches in the Region to indicate any substantial spread. A few live beetles were trapped again this year in Birmingham, Alabama, under conditions indicating that they were hitchhikers; and one beetle was captured in a trap at Herndon Airport, Orlando, Florida.

Table 15.--Japanese Beetle Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection				Control			
	Acres surveyed (visual)	Locations trapped	Positive specimens	Acres found infested	Acres treated			Biological
					Insecticide			
					Ground	Air	Total	
Alabama	3	694	2 <sup>1</sup> / <sub>2</sub>	...	...	...	...	...
Arkansas	...	263	...	...	...	...	...	...
Florida	21	264	1 <sup>1</sup> / <sub>2</sub>	...	...	...	...	...
Georgia	1,723	1,043	1	700	31	...	31	...
Louisiana	...	58	...	...	...	...	...	...
Mississippi	63	228	...	...	...	...	...	...
North Carolina	79,121	27	...	...	2,294	...	2,294	797
Oklahoma	120	80	...	...	...	...	...	...
South Carolina	6,582	843	11	56,750	...	...	...	...
Tennessee	1,932	1,770	140	685	3,459	10,962	14,421	...
Texas	...	59	...	...	...	...	...	...
Total	89,565	5,329	155	58,135	5,784	10,962	16,746	797

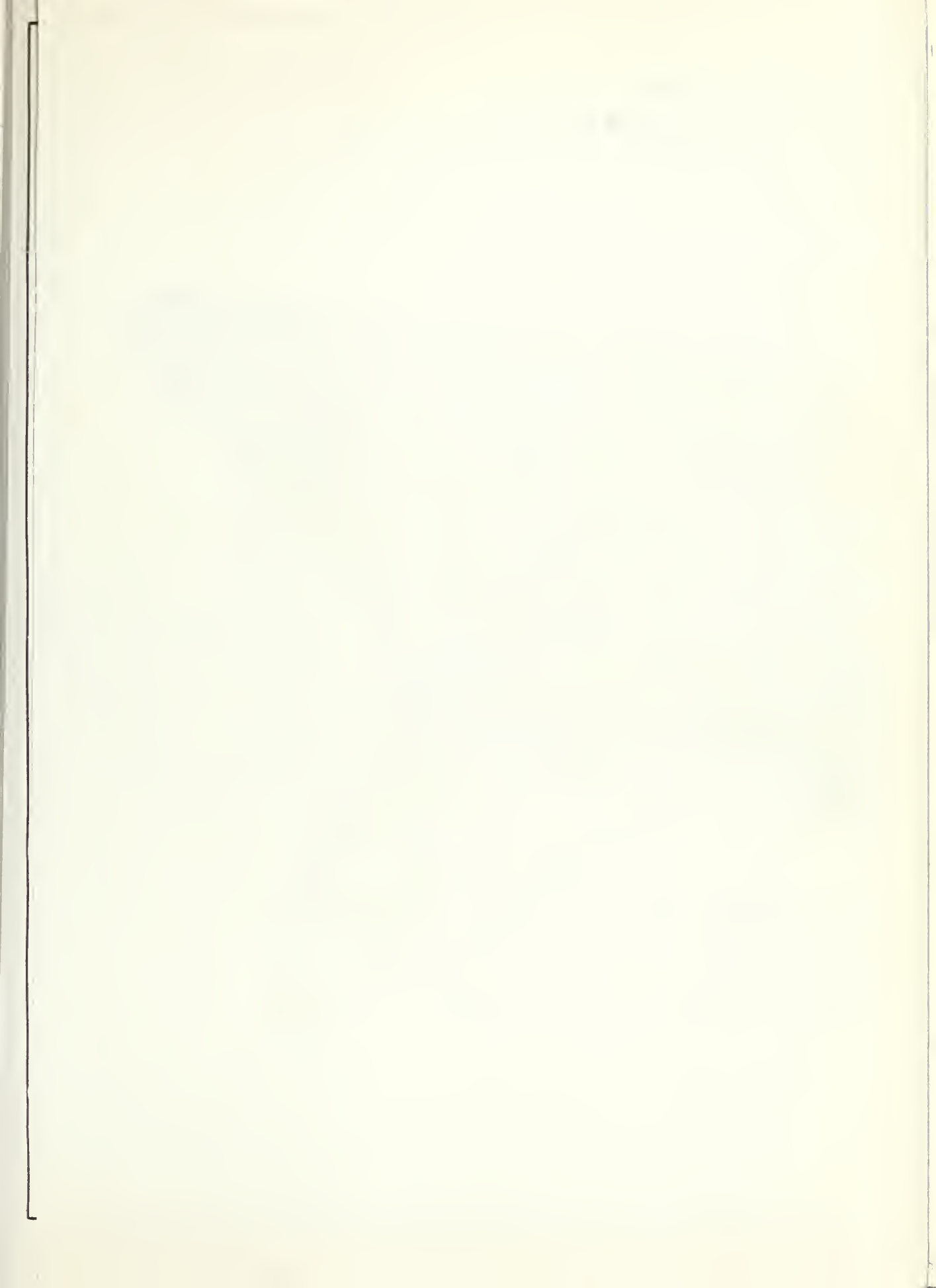
1/ "Hitchhiker"--no established infestation found.

Table 16.--Japanese Beetle Program, Regulatory Activities, Fiscal Year 1963

State	Inspection for certification						Acres treated for certification		Commodity lots treated				
	Properties	Acres		Processing plant visits	Shipping point visits	Other			Fumigated	Dipped	Soaked	Other	Total
		Nursery	Other				Soil	Foliage					
Alabama	1	...	...	...	...	7	...	...	...	...	...	...	...
Florida	...	...	...	...	...	5	...	...	...	...	...	...	...
Georgia	4	...	...	...	4	...	...	...	...	...	...	...	...
Louisiana	1	...	...	...	...	24	...	...	...	...	...	...	...
N. Carolina	774	1,136	765	201	781	255	539	459	240	47	2,574	106	2,967
S. Carolina	35	65	...	...	34	13	93	...	...	...	...	152	152
Tennessee	2	...	...	...	...	63	182	...	...	...	...	52	52
Texas	...	...	...	...	...	27	...	...	...	...	...	...	...
Total	817	1,201	765	201	819	394	814	459	240	47	2,574	310	3,171

Table 17.--Japanese Beetle Program, Regulatory Activities--Commodities Treated  
Fiscal Year 1963

Commodities	Lots treated			
	North Carolina	South Carolina	Tennessee	Total
Fruits and Vegetables	239	...	50	289
Nursery Stock	1,694	151	...	1,845
Soil	32	...	2	34
Transplants	1,001	...	...	1,001
Other	1	1	...	2
Total	2,967	152	52	3,171

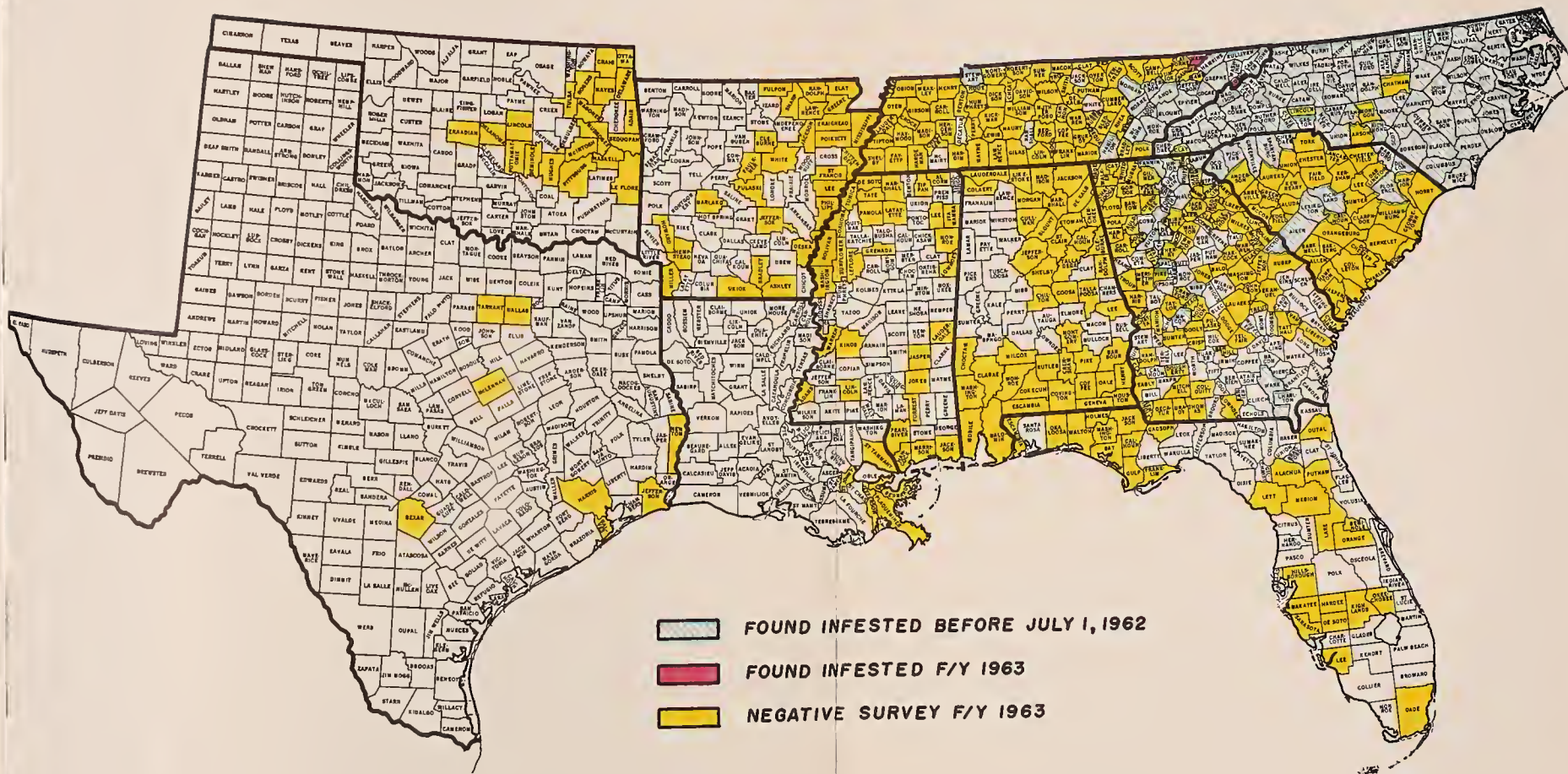






UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
 SOUTHERN REGION

JAPANESE BEETLE





## BURROWING NEMATODE

The burrowing nematode is a small, parasitic eelworm, approximately 1/40 of an inch long, which is recognized as a serious pest of citrus. It causes a stunted condition, known as "spreading decline," in citrus and avocado trees, as well as in some 115 other species of plants, and results in reductions of 40 to 80 percent in yields. In the Southern Region, it is found in Florida and Texas. Principal activities in connection with the Burrowing Nematode Program are in the State of Florida, where there are two objectives: to prevent the further spread of the burrowing nematode in citrus areas, and to eradicate existing infestations in order that the land may be returned to profitable citrus production. These objectives are accomplished by:

1. Removing trees from the affected areas and fumigating the land with dichloropropene. This work is commonly referred to as the push-and-treat program.
2. Placing a chemical barrier strip around infestations where the grower will not agree to a push-and-treat program.
3. Regulating the movement of articles hazardous from the standpoint of spreading the burrowing nematode. These include, but are not limited to, various forms of nursery- and greenhouse-grown plants.

The responsibility for the conduction of the program is shared by the Division of Plant Industry of the Florida Department of Agriculture and the Plant Pest Control Division. The Division of Plant Industry assumes responsibility for the regulatory and control phases of the program and the Plant Pest Control Division for all survey phases. Delimiting surveys are made in groves being prepared for push-and-treat programs or for the installation of chemical barriers. The purpose of these surveys is to determine the exact limits of the area to be treated. Detection surveys for decline symptoms are made throughout the citrus-growing area in Florida. Root samples are taken from all suspicious areas and carefully examined in the laboratory for the presence of the nematode. Thorough surveys are made in proposed citrus nursery planting sites and in ornamental nurseries that ship plants to other citrus-growing states. Survey is made of margins of previously treated groves and of groves that have been treated and planted to young trees in order to determine that the control operations are effective. The margins of treated groves are inspected annually for a minimum of 3 years to determine whether spread of the nematode has been stopped. Replanted fumigated areas are checked several times during the first 5-year period. If inspections are negative over this period of time, the property is declared free of nematodes and released from further intensive surveys.

At the close of fiscal year 1963, there were 172 groves in Florida that had been pushed and treated; and in the negative marginal areas, surveys had been conducted for the minimum 3-year period. It is interesting to note that the first treatment was successful on 131 of these groves, 34 groves had to be pushed and treated a second time, 6 groves the third time, and 1 grove was cleaned up only after the fourth treatment.



Other treated groves in the State would have met the 3-year negative margin test had they not become reinfested by spread of the burrowing nematode from adjoining citrus groves. The barrier phase of the program now in operation should eliminate such recurrences in the future.

The severe freeze in mid-December of 1962 affected nearly all of the northern and central citrus-growing area, including the counties in which the greatest incidence of spreading decline occurs. Because of the freeze damage to the trees, symptom surveys have become more difficult in many areas; however, in many instances, it has decreased grower resistance to the push-and-treat program.

During the year, minor improvements were made in both the control and the regulatory phases of the work. A rubber-tired tractor is now used in treating the barrier strips, and thus the machinery is cleaned much more easily than it was at the time caterpillar tractors were used exclusively in this work.

The following is a summary of the work accomplished in Florida during fiscal year 1963.

#### SURVEY OF CITRUS GROVES

<u>Push-and-Treat</u>		<u>Barriers</u>	
Properties surveyed	127	Areas completed	77
Acres surveyed	2,596	Properties involved	495
		Acres surveyed	8,680
		Acres inside barriers	2,283
<u>Margins</u>		<u>Replants</u>	
Properties surveyed	246	Properties surveyed	73
Properties found positive	41	Properties found positive	25
Acres surveyed	5,875	Acres surveyed	560
		Trees sampled	34,696
		Number of trees positive	65

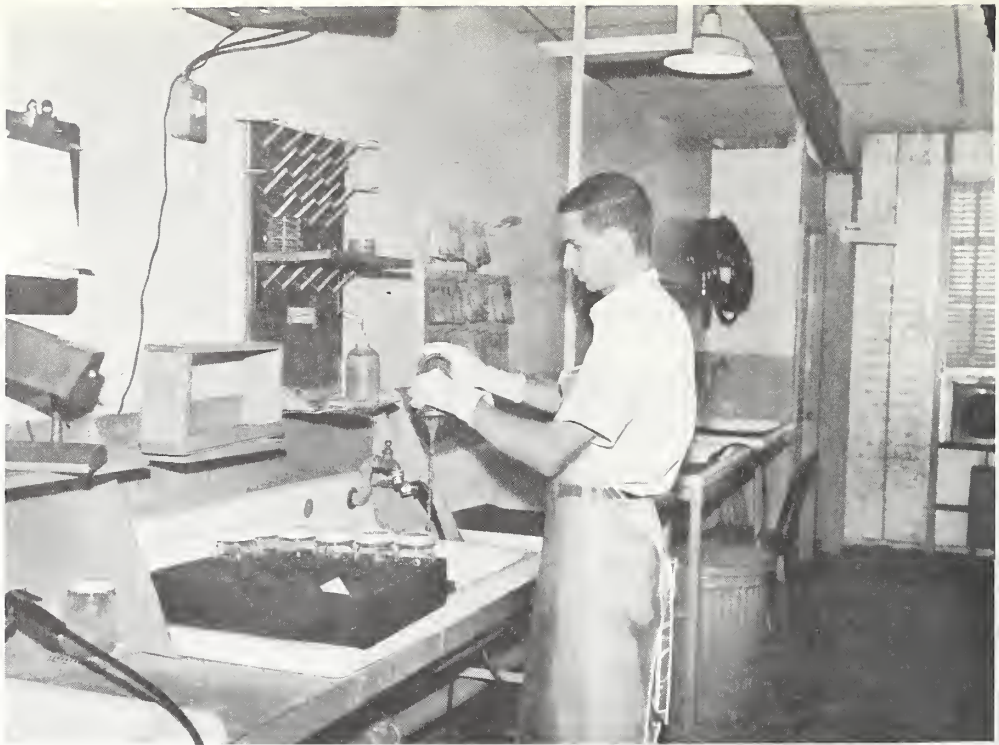
#### SURVEY OF NURSERIES

Type	Properties surveyed	Acres surveyed	Properties found positive
Citrus	336	329.60	15
Ornamental	147	532.55	20
Pecan	21	146.50	...
Nursery Sites	244	1,278.59	4
Total	748	2,287.24	39

In Texas, there are two nurseries known to be infested with the burrowing nematode, the Pan American Nursery at Brownsville and the Winter Garden Nursery at Waxahachie. The Winter Garden Nursery was surveyed during the year and seven positive collections were made. All the plant beds were steam sterilized; and in an effort to prevent the organism from being brought back to the State, only stem cuttings are now being received from Florida. Later it is planned to clean up and treat this nursery.



A soil auger is used in securing representative root samples for examination. The soil removed by the auger is screened to collect the feeder roots.



The roots are placed in individual jars and taken to the laboratory where they are washed and cleaned in preparation for examination under the microscope.





If a collection is found to be positive, one of two types of program is instigated, both of which are relatively effective in retarding the spread and reducing the incidence of the burrowing nematode in Florida citrus.



The push-and-treat program consists of the removal of all citrus trees from the affected area and the fumigation of the soil with ethylene dibromide.



In the absence of a push-and-treat program, a chemical barrier is constructed and maintained around the affected area to prevent the migration of the organism. Note infested grove on left.

Table 18.--Burrowing Nematode Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection					Control	
	Surveyed		Samples collected	Found infested		Properties treated	Acres fumigated
	Properties	Acres		Properties	Acres		
Florida	2,215	36,163	108,007	140	512	192	921
Texas	1	1	29	1	1	...	...
Total	2,216	36,164	108,036	141	513	192	921

Table 19.--Burrowing Nematode Program, Regulatory Activities, Fiscal Year 1963

State	Inspection for certification		Commodity treatment (lots nursery stock heated)
	Properties	Nursery acres	
Florida	504	1,007	15,578
Total	504	1,007	15,578

## SOYBEAN CYST NEMATODE

Soybean cyst nematodes have been known to exist in Japan and Manchuria for many years. They were first discovered in this country in August 1954 in the vicinity of Wilmington, North Carolina. In 1956, infestations were discovered on Presidents Island in southwestern Tennessee and in the delta area in northwestern Tennessee. The following year, infestations were found in northeastern Arkansas. The latter two infestations were found to extend into the States of Kentucky and Missouri in the Central Region. A single field lying between the levee and the Mississippi River in the northwestern portion of Mississippi, also, was found infested in 1957. It is evident that this introduction was due to floodwater from the heavy infestations north of that point. These infestations, obviously, had been present for several years prior to discovery. For lack of evidence to the contrary, it may be assumed that these widely separated areas became infested from two separate introductions of soybean cyst nematodes.

Soybean cyst nematodes affect production in all infested areas to some extent each year. Retardation of plants and loss of production are greater in North Carolina than in the major commercial producing areas in the Mississippi River Delta. This is probably due to the fertility and high moisture content of delta soil. Severe injury may be expected in all infested areas during periods of prolonged drought.

Extensive research by various individuals and agencies has failed to develop a treatment that might be used, regardless of cost, to eradicate even small, isolated infestations. Many treatments have been developed that kill up to 99 percent or more of the nematodes; but unlike most other pests, soybean cyst nematodes multiply so rapidly that the few which survive treatment are capable of restoring a normal, or even an above-normal, population in a single season if host plants are present.

Plant Pest Control activities on this program consist primarily of detection and regulation of the movement of commodities or items likely to spread infestation. Detection is the major problem of the program. Infested bean plants may show no symptoms, or may be off color in varying degrees. Symptomatic surveys, however, cannot be used effectively because numerous other conditions cause similar effects on the plants. The principal method of detection consists of collecting and examining soil samples. Many tons of soil are collected and processed annually. The process is slow and cumbersome. The funds and manpower available are inadequate to properly delimit infestations. The work might be considered a holding action pending the development, by research, of control or eradication methods which may be used.

The development of a resistant strain of soybeans seems to hold considerable promise. Experimental plots have been set up in North Carolina, Tennessee, and Arkansas for the purpose of comparing a resistant strain of black beans with a popular variety of yellow beans which are grown throughout the infested areas. Examinations have shown from medium to very high populations of white



cysts on the roots of the nonresistant variety and no cysts on the roots of the black resistant strain. Black beans have objectionable features from the standpoint of industry, but at least one research agency has reported the development of a yellow strain of beans which also appears to be resistant to soybean cyst nematode attack.



Test plot showing on the right the common variety usually grown in the North Carolina area and on the left the NC55 resistant strain.

Table 20.--Soybean Cyst Nematode Program, Survey Activities, Fiscal Year 1963

State	Survey and detection				
	Surveyed		Samples collected	Found infested	
	Properties	Acres		Properties	Acres
Alabama	618	20,268	369	...	...
Arkansas	1,689	64,835	4,419	5	516
Georgia	192	15,319	115	...	...
Louisiana	5	1,915	...	...	...
Mississippi	623	20,498	767	2	95
North Carolina	19,459	218,644	4,814	4	88
Oklahoma	90	2,134	3	...	...
South Carolina	15,206	555,820	612	...	...
Tennessee	1,928	97,476	468	35	973
Total	39,810	996,909	11,567	46	1,672

Table 21.--Soybean Cyst Nematode Program, Regulatory Activities, Fiscal Year 1963

State	Regulatory									
	Inspection for certification					Commodity lots treated				
	Properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Other	Fumigated	Other	Total
		Nursery	Other							
Arkansas	41	...	...	230	1	...	144	3	118	121
Mississippi	...	...	...	...	...	...	...	30	...	30
North Carolina	...	...	...	...	...	...	...	46	14	60
Tennessee	91	6	166	54	51	15	118,641	16	138	154
Total	132	6	166	284	52	15	118,785	95	270	365



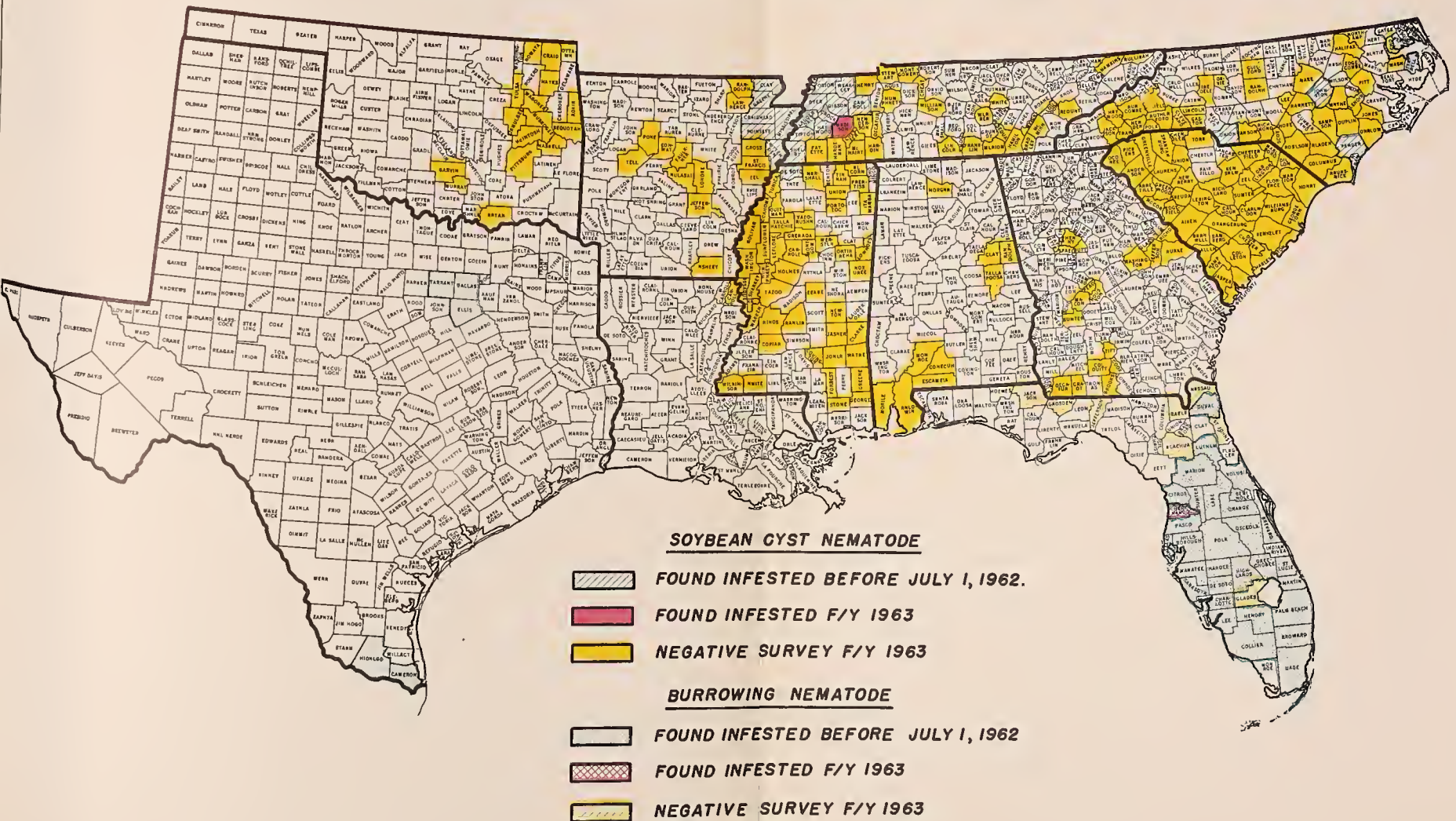






UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
 SOUTHERN REGION

SOYBEAN CYST NEMATODE - BURROWING NEMATODE





# PEACH MOSAIC

Peach mosaic is a serious disease of peaches and related fruits which is transmitted by a microscopic eriophyid mite. Infection in a planting may destroy its value in 3 to 6 years. Mosaic control is considered a holding program until such time as resistant varieties of peaches or improved control techniques can be developed. At the present time, the only known control is destruction of the infected trees.

In the Southern Region, peach mosaic work is conducted in the States of Arkansas, Oklahoma, and Texas. For the most part, this work is for nursery certification purposes and is carried out in the nurseries, their environs, and in areas of budwood sources. A few commercial orchards are inspected in the State of Arkansas. This year no diseased trees were found in that State. Seven infected trees were found in the environs of nurseries in Bryan County, Oklahoma, and were removed promptly. In the State of Texas, the mosaic incidence was less than half that found the previous year.

Table 22.--Peach Mosaic Program, Survey, Control, and Regulatory Activities, Fiscal Year 1963

State	Survey and detection				Control		Regulatory				
	Surveyed		Found infected		Mechanical treatment		Inspection for certification				Commodity lots treated <sup>3/</sup>
	Properties	Hosts	Properties	Hosts	Properties	Hosts	Properties	Acres		Other <sup>2/</sup>	
								Nurs.	Other <sup>1/</sup>		
Arkansas	176	1,092,972	...	...	...	...	69	32	918	248,987	...
Oklahoma	72	837,541	...	...	...	...	186	1,280	1,920	...	7
Texas	192	222,642	14	17	14	17	120	500	1,124	...	...
Total	440	2,153,155	14	17	14	17	375	1,812	3,962	248,987	7

<sup>1/</sup> Budwood sources and environs.

<sup>2/</sup> Host trees in dealers' custody.

<sup>3/</sup> Diseased trees and wild host plants removed from nurseries and budwood sources and environs.



## PHONY PEACH

In the Southern Region, phony peach programs are conducted in Alabama, Arkansas, Georgia, Louisiana, Mississippi, South Carolina, and Texas.

The phony peach work in Alabama is confined, for the most part, to Chilton County, the largest peach-growing county in the State. This year, all commercial plantings were surveyed, and a relatively low incidence of phony disease was found. As a result of the nursery survey carried out in the State, all nurseries were approved except a small property near Birmingham where, following the inspection, all peach stock was removed.

The survey and tree-removal work in Arkansas was confined to Cross, Howard, Lee, Phillips, and St. Francis Counties. The incidence of phony disease was very low, and all infected trees were destroyed by the orchard owners. Some wild plum eradication was carried out in the State but, on the whole, interest in this phase of the program is declining.

More than 100,000 trees were inspected in four north-central Louisiana counties. A substantial reduction was noted in the number of diseased trees found in 1963 as compared with the 1962 record. All infected trees were destroyed by orchard owners.

Most of the phony peach work in Mississippi was conducted in Clarke and Lauderdale Counties, where the principal commercial orchards in the State are located. Approximately 95,000 trees were inspected in this section, 313 of which were infected. All diseased trees were removed and about 10 acres of wild plum were herbicided.

Principal program activities are in the States of Georgia and South Carolina. In Georgia, the incidence of phony disease is at its lowest point since the inception of the program—only 0.34 percent of the trees inspected were found to be diseased. This extremely low incidence is believed to be due to the excellent cooperation being extended by the growers both in removing the infected trees and in the wild plum eradication program. In South Carolina, all commercial plantings in the Central and Coastal Plains Counties were surveyed during July and August. The incidence of phony disease was very low, and all infected trees were removed promptly by the growers. Here, as in Georgia, the farmers are cooperating in the wild plum eradication program, which is almost a necessity for a successful phony peach program in a district. During the year, a number of orchards in the Piedmont area were checked to determine whether the incidence of phony peach disease is increasing in this area, which to all appearances is beyond the overwintering range of the principal vector of this disease. Only two infected trees were found in the survey, again indicating that yearly surveys for this disease are not necessary in the Piedmont section.

Surveys were conducted in 12 Texas counties: Bexar, Camp, Cass, Cherokee, Freestone, Gillespie, Harrison, Limestone, Red River, Smith, Titus, and Upshur. There was a decline of approximately 40 percent in the incidence of



phony peach disease in this area. Under the sponsorship of the Texas State Department of Agriculture, a cooperative wild plum eradication program was undertaken in Gillespie County, where the growers are showing considerable enthusiasm. This activity should add to the effectiveness of the work in that area.



Inspection of an abandoned peach tree in the environs of budwood source.



Inspection of young peach stock for certification purposes.



Inspectors drive slowly through the orchard, observing each tree for symptoms. (Much inspection now is done by jeep.)

Table 23.--Phony Peach Program, Survey, Control, and Regulatory Activities, Fiscal Year 1963

State	Survey and detection				Control			Regulatory		Commodity lots treated <sup>1/</sup>
	Surveyed		Found infected		Treated		Inspection for certification			
	Properties	Hosts	Properties	Hosts	Properties	Mechanical Hosts	Herbicide Acres	Properties	Acres nursery	
Alabama	413	821,645	230	1,977	230	1,977	...	...	...	...
Arkansas	52	172,840	8	21	11	24	...	...	...	...
Georgia	293	3,222,935	262	10,893	284	10,893	28	13	4	...
Louisiana	285	124,283	35	494	35	494	...	...	...	...
Mississippi	28	48,000	17	401	17	401	10	...	...	...
S. Carolina	348	1,855,155	78	341	154	341	79	...	...	...
Texas	126	219,409	15	40	15	40	...	44	388	903
Total	1,545	6,464,267	645	14,167	746	14,170	117	57	392	903

<sup>1/</sup> Diseased trees and wild host plants removed from nursery sites and environs.



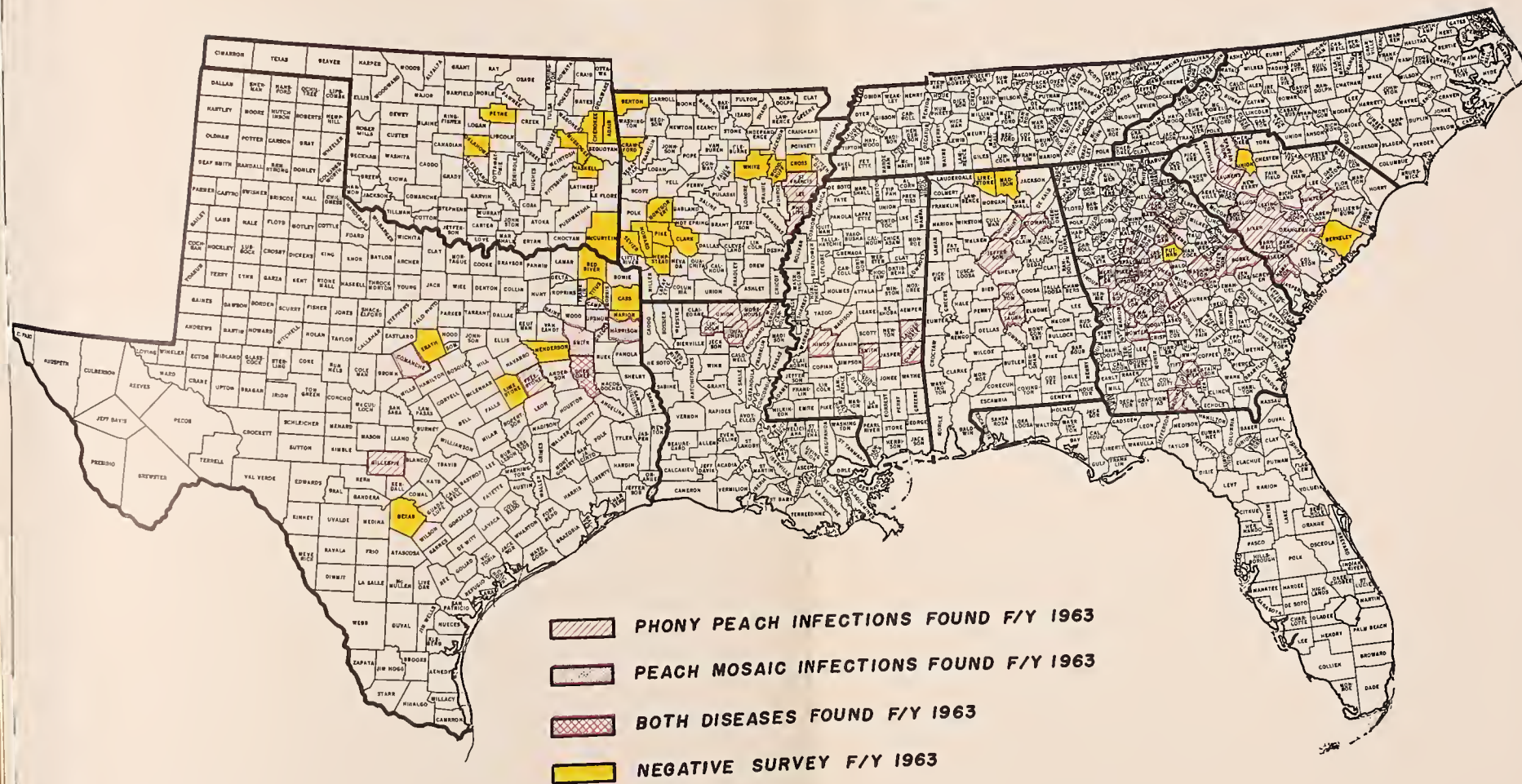






UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
 SOUTHERN REGION

PHONY PEACH - PEACH MOSAIC





## PINK BOLLWORM AND WILD COTTON

### Pink Bollworm

The pink bollworm (Pectinophora gossypiella), one of the most destructive of the cotton insects, now infests to some degree about a third of the acreage devoted to cotton production in this country. In the Southern Region, Texas and Oklahoma are considered to be generally infested, with isolated infestations occurring in parts of Louisiana and Arkansas where eradication programs are in progress. In fiscal year 1963, all or parts of 28 counties in Arkansas and 8 parishes in Louisiana were released from quarantine, leaving all or parts of 8 counties in Arkansas and 6 parishes in Louisiana still under regulation.

Gin trash and/or lint cleaner inspections, supplemented in many areas by boll and bloom inspections, were conducted in the principal cotton-growing areas in each of the States in the Region. Two specimens of pink bollworm were recovered in Arkansas, one from Cleburne County and the other from Hempstead County. Thirty-one specimens were recovered during inspections in four parishes in northwest Louisiana. In the generally infested States of Oklahoma and Texas, infestation remained low, with medium populations reported in 5 counties in south-central Oklahoma and 49 counties in Texas. The marked increase in intensity of pink bollworm populations in the Oklahoma counties prompted the State Entomologist to write letters to the managers of the 35 gins in the area, advising them of the survey results and outlining suggestions to combat the infestation. Two counties in Texas, San Patricio and Nueces, both in the Corpus Christi area, were classified as heavily infested. Infested bloom counts in the Port Lavaca area indicated a potential for high population during the 1963 crop. In both the Corpus Christi and the Port Lavaca areas, this condition is attributed to the extremely dry weather which resulted in low mortality of pink bollworms during the winter months. In all other States, results were negative.

Compliance with mandatory stalk destruction requirements was very good, although extensions were necessary in a few cases. The reenactment of the escrow program in the Lower Rio Grande Valley aided in obtaining one of the best cleanups on record. Rains delayed harvest in some sections, but later extremely dry weather resulted in very little decomposition of crop residue. Excellent results were obtained in the voluntary stalk destruction program. At the request of the farmers, the Louisiana Department of Agriculture and Immigration made one change in its cultural control requirements to permit the shredding of cotton stalks in lieu of plowing when a winter cover crop had been planted in the field, or portion thereof, prior to harvest.

Good cooperation in complying with State and Federal regulatory requirements was received from all processors and handlers of regulated products in the areas under regulation. The new provisions for certification of lint cleaner waste from saw-type lint cleaners encouraged many gin managers to qualify their cleaner motes for shipment outside the generally infested area. There was a considerable increase in the number of mechanical cotton pickers requiring fumigation and certification.



Road stations were operated from early August through October on the main highways leading from Texas into Louisiana, and for a longer period on highways leading from Texas and Oklahoma into Arkansas. Inspection stations again were operated at the bridges over the Mississippi River at Natchez, Greenville, and Lula, Mississippi.

Although severe damage occurs from time to time in individual fields or small areas, cultural and chemical control and strict regulatory practices have kept losses from this insect to a relatively low level since 1952, when unfavorable weather conditions interfered with the control program in Texas and the resulting damage to cotton in that State was estimated at \$30 million.

### Wild Cotton

Wild and ornamental cotton plants growing in several southern Florida counties provide a host for the pink bollworm. Through strict quarantine regulation, systematic destruction of host plants, and the establishment of noncotton zones, the Wild Cotton Eradication Program carried on in southern Florida has been successful in preventing the movement of the pest from that area to the main cotton belt in northern Florida and southern Georgia. Removal of wild and ornamental dooryard cotton plants creates a nonhost period and reduces the survival of the pink bollworm.

During the past season, 20,764 acres were surveyed, and 2,094 mature plants were destroyed. There were 261 pink bollworm larvae and pupae recovered from Dade, Lee, and Monroe Counties, as compared with 177 in 1962. For the second time since 1943, pink bollworm was found in Lee County.

Because okra is a secondary host of the pink bollworm and is shipped to markets outside the State of Florida, inspections were made of 1,984 pods in Dade and Monroe Counties, all with negative results.

The use of granular herbicide 2603 (General Chemical Urab) was continued in those areas on the Mainland Keys where wild cotton plants were actually found. During the short period the herbicide is active, it destroys the young cotton plants. The larger cotton plants were treated with Ammate.

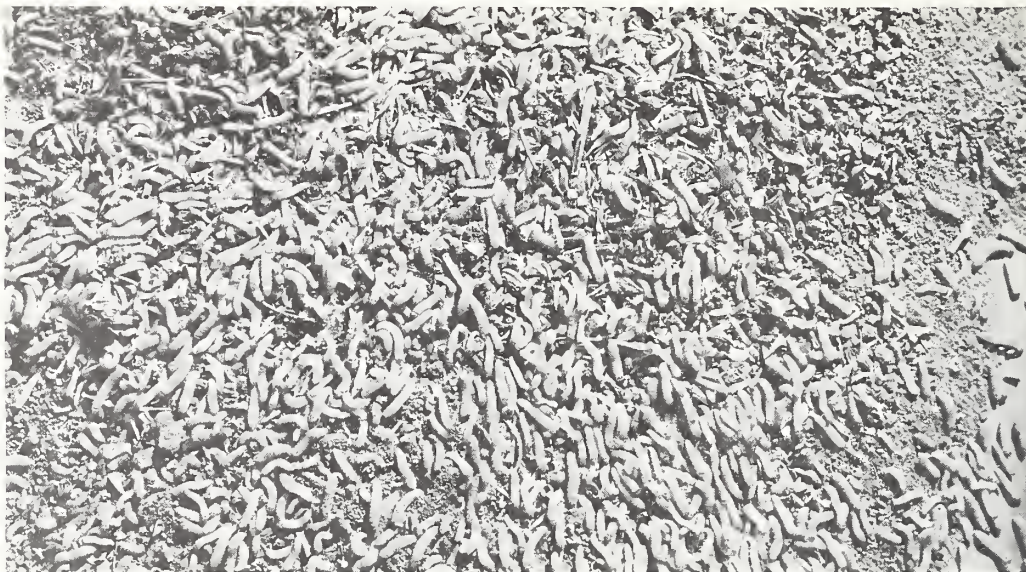
In Monroe County, only one pink bollworm was recovered from hibiscus plants on Plantation Key where infestation was found prior to fiscal year 1962.

During the picking season, cotton pickers moving from one section to another carry their own pick sacks, many of which are contaminated with seed cotton carrying the pink bollworm. Inspection stations are maintained to intercept as much of this material as possible. In the foreground of the lower picture, note pile of seed cotton that has been collected from these sacks.

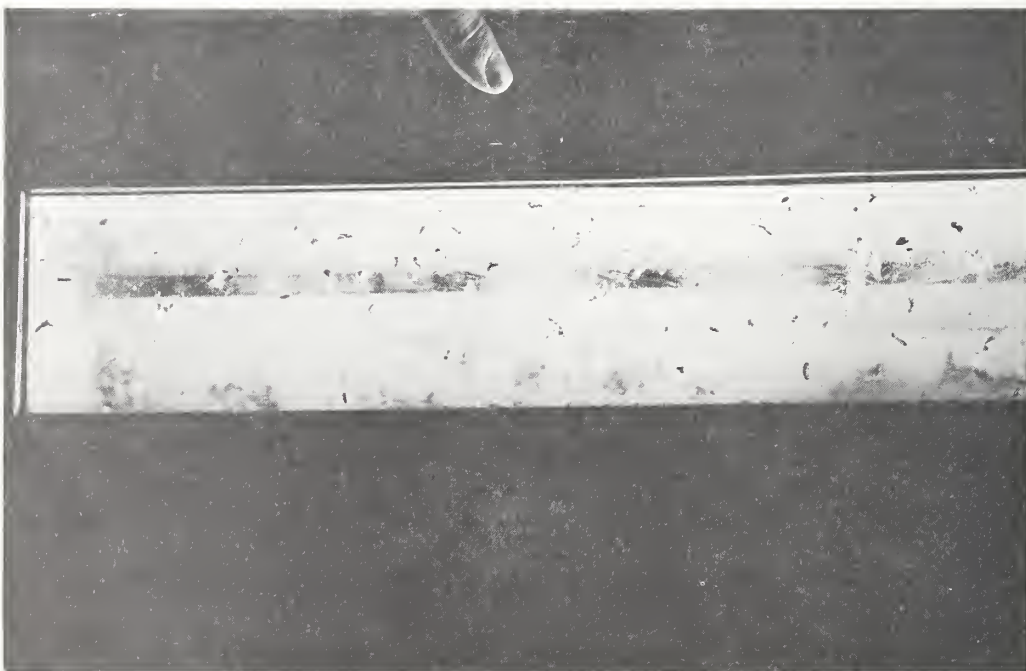




The two most common methods of inspecting for pink bollworms are through the use of gin trash machines and by the examination of the glass in the lint cleaner.



Pink bollworm larvae collected with gin trash machine.



Lint cleaner inspection glass following the ginning of cotton from a heavily infested field.





This cotton stalk from a field heavily infested with pink bollworms illustrates the destructiveness of this cotton pest.



The stalk destruction program is designed to reduce the overwintering population of the hibernating pink bollworm larvae and is mandatory in many parts of the quarantined area in Texas, Arkansas, and Louisiana.

Table 24.--Pink Bollworm Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection							Control
	Surveyed			Positive specimens	Found infested <sup>1/</sup>			Acres treated (mechanical)
	Properties	Bushels gin trash	Acres		Properties	Acres	Hosts	
Alabama	412	468	1,237	...	...	...	...	...
Arkansas	14,716	52,783	...	2	2	1,365	...	1,358,312
Florida	168	412	5,574	111	11	351	24	...
Georgia	333	892	...	...	...	...	...	...
Louisiana	2,493	10,749	437	17	17	...	...	129,579
Mississippi	1,602	5,629	...	...	...	...	...	...
North Carolina	85	...	...	...	...	...	...	...
Oklahoma	651	3,672	...	...	82	...	...	53,597
South Carolina	109	...	53	...	...	...	...	...
Tennessee	1,040	4,570	...	...	...	...	...	...
Texas	4,232	1,503	...	...	538	...	...	2,264,176
Total	25,841	80,678	7,301	130	650	1,716	24	3,805,664

<sup>1/</sup> Not necessary to report acres of infestation found within regulated area.

Table 25.--Pink Bollworm Program, Regulatory Activities, Fiscal Year 1963

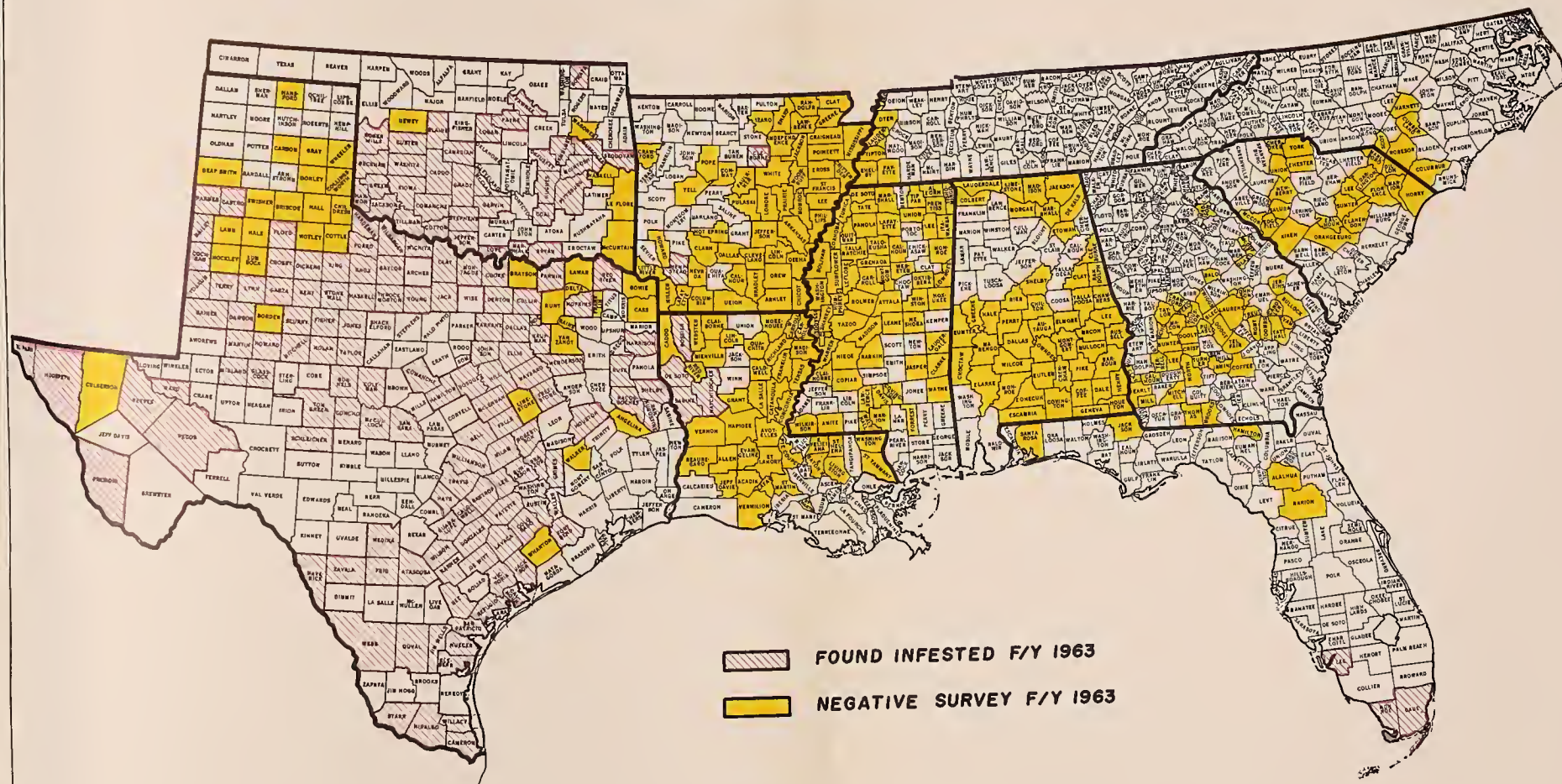
State	Inspection for certification					Commodity lots treated			
	Properties	Processing plant visits	Shipping point visits	Industry site visits	Other	Fumigated	Heated	Other	Total
Arkansas	137	3,050	...	53	44	106	...	...	106
Louisiana	228	2,106	20	...	1,390	182	3,168	66,941	70,291
Mississippi	4	...	...	...	4	22	...	...	22
Oklahoma	209	2,044	...	25	...	18	...	...	18
South Carolina	...	...	...	...	...	4	...	...	4
Tennessee	130	117	14	2	5	34	1	3	38
Texas	1,879	20,789	64	97	926	664	9	53	726
Total	2,587	28,106	98	177	2,369	1,030	3,178	66,997	71,205





UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
SOUTHERN REGION

PINK BOLLWORM









## SWEETPOTATO WEEVIL



Weevil-damaged sweetpotato.

The sweetpotato weevil is not indigenous to the United States but is a native of the Orient, where it was described in 1792. As early as 1857 it was known to be an economic pest of sweetpotatoes in India. It was first recorded in this country in Louisiana about 1875, and it is presently known to occur in China, Cuba, The Dominican Republic, Haiti, Mexico, Puerto Rico, Venezuela, and in other South and Central American countries.

The sweetpotato weevil has been recognized for a long time as this country's most serious pest of sweetpotatoes, one that has attracted the attention of Federal and State entomologists since 1917, when the first appropriation was made to the Department of Agriculture to study and combat it. The work was interrupted from 1934 to 1937 for lack of appropriations. The program was reactivated in 1937 as a control and eradication project under the supervision of the Division of Domestic Plant Quarantines of the Bureau of Entomology and Plant Quarantine, and has continued under the supervision of the regulatory agency of the Department since that time.

In the United States the infestation of the sweetpotato weevil is confined to the States of Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas. The extent of infestation varies in the different States. In South Carolina, infestation is confined to a few coastal counties and is found almost entirely in native host material. In Florida, infestation is general throughout the State. In Alabama, Georgia, and Mississippi, infestations are confined to the southernmost counties. The southern half of Louisiana is generally infested, as is the southern third of Texas.

The objective of the Plant Pest Control Division in work directed against the sweetpotato weevil is to cooperate with the affected States in preventing further spread, eradicating the insect in selected areas, and keeping populations under control in large commercial sweetpotato-growing areas that are now infested with this pest.

In South Carolina this year, an all-out effort has been made to further the eradication effort. Herbicides have been used on native hosts in the infested areas, traps have been maintained at all strategic locations, and intensive surveys have been made throughout the environs of the infestations.

Much progress has been shown in the reduction of infestations in all the infested counties in Georgia. Growers, packers, and shippers have cooperated to the fullest in carrying out all recommendations for the suppression of this pest. In this State, both insecticide programs and nonhost zones are being utilized to accomplish program objectives.

In Alabama, satisfactory progress is being made. Eradication programs are under way in all infested counties, with the exception of Mobile and Baldwin Counties where eradication is not practical at the present time because of wild host plant association. In these two counties, however, a well planned and adequately supervised insecticide program is in progress, and weevil populations, as a whole, are at an alltime low.

In Mississippi, the stepped-up inspection program of the past 2 years brought to light more infestations than had been thought to exist in the State. This fact, together with reduced State funds, necessitated classifying as generally infested several counties in which eradication work had been planned. At the present time, good progress is being made with eradication programs in five southern counties; and as the workload decreases in these, such measures will be extended to other counties in the State.

The work in Florida is strictly of a suppressive nature. It is confined to the northern tier of counties and is designed to create a pest-free area between the eradication zones in Georgia and Alabama and the generally infested counties in the remainder of the State.

Louisiana is the largest sweetpotato-growing State in the South and has the largest Sweetpotato Weevil Program. Each year the State puts some \$470,000 into this program, much of which is spent in the supervision of an insecticide program in the generally infested area south of U. S. Highway 190, which is the area of greatest sweetpotato production. Under the supervision of trained inspectors, the crop is regulated from the time of bedding through its shipment to market. This closely supervised, all-inclusive program makes possible the largest sweetpotato industry in the United States. Without the program, it is doubtful that this industry could continue to exist. In other parts of the State, eradication programs are conducted to keep the seed potato area in the northern part of the State free of infestation.

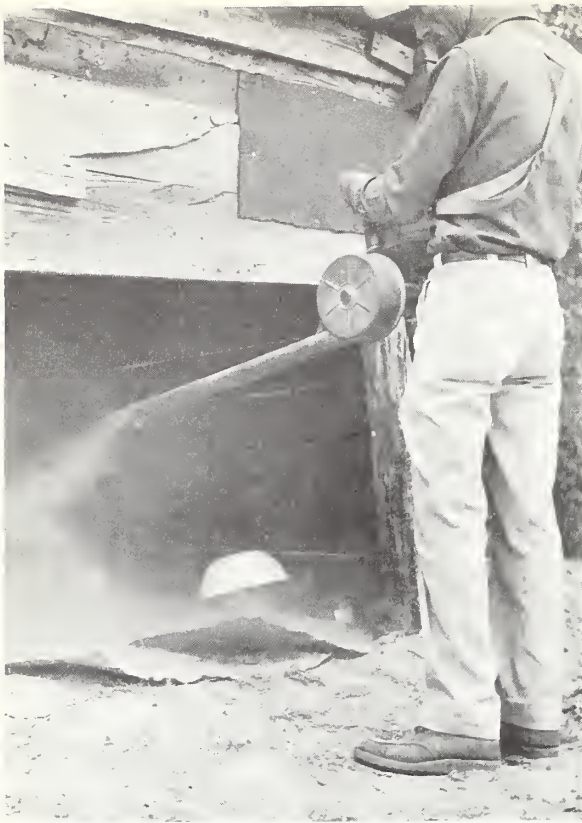
In Texas, infestations of sweetpotato weevil are general throughout the southern and southeastern parts of the State. In this area, few commercial

potatoes are grown, and the infestation that exists there maintains itself in wild host materials and dooryard plantings. Strict quarantines prohibit the movement of potatoes and other hazardous materials to the northern part of the State, or to outside points. The commercial potato-growing area in Texas is in the northeastern part of the State. This section is free of the sweetpotato weevil. The Texas program consists of control and eradication activities in counties to the south of the commercial area. At the present time such work is under way in Anderson, Cherokee, Houston, Leon, Madison, Nacogdoches, Rusk, San Augustine, Shelby, and Trinity Counties. As successful programs are completed in these counties, other counties to the south will be included, with special efforts being made to extend the work to Angelina and Sabine Counties.



In the early spring, remnant potatoes from old beds are carefully examined, as illustrated by this inspector, for the presence of the sweetpotato weevil.





If infestations are found, the bank or storehouse is dusted with DDT or dieldrin to kill overwintering adult weevils that could infest the new plantings.



As the slips begin to sprout from the beds in the spring, the area is regularly covered with dieldrin dust. These spring precautionary measures serve to keep populations of the sweetpotato weevil low and usually will assure a clean source of material for field planting.

Table 26.--Sweetpotato Weevil Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection					Control			
	Surveyed		Properties found infested	Properties released	Active infestations 6-30-63	Insecticide		Herbicide	Mechanical
	Properties	Bushels (potatoes)				Acres	Bushels (potatoes)	Acres	Acres
Alabama	6,723	179,139	60	54	94	2,605	42,208	...	...
Florida	4,158	866	45	...	894	1,369	32,969	...	...
Georgia	7,824	242,947	103	559	140	4,002	105,611	627	1,367
Louisiana	14,493	232,458	251	118	303	333	1,520,037	18	44,355
Mississippi	7,707	11,368	140	...	513	36	...	...	2
N. Carolina	87	6,653	...	...	...	...	...	...	...
S. Carolina	3,411	26,937	...	2	9	269	...	355	...
Tennessee	3	205	...	...	...	...	...	...	...
Texas	1,955	76,235	85 <sup>1/</sup>	...	85 <sup>1/</sup>	582	...	...	...
Total	46,361	776,808	684	733	2,038	9,196	1,700,825	1,000	45,724

<sup>1/</sup> In Texas, farms are inspected in the fall in the 10 counties in which sweetpotato weevil work is being conducted. Figures for number of infested properties are established each year, following the fall survey.

Table 27.--Sweetpotato Weevil Program, Regulatory Activities, Fiscal Year 1963

State	Inspection for certification						Commodity lots treated			
	Properties	Acres		Processing plant visits	Shipping point visits	Other	Fumigated	Treated other methods		Total
		Nursery	Other					Transplants (seedbeds)	Other (storages)	
Alabama	1,154	...	3,951	11	248	10,889	...	368	460	828
Florida	...	...	...	...	...	...	...	1,625	600	2,225
Georgia	...	...	...	...	...	...	...	537	792	1,329
Louisiana	8,094	913	45,196	12,455	...	142,480	1	56	5,739	5,796
Mississippi	306	...	44	...	...	21,522	...	633	22	655
Tennessee	1	...	...	...	...	3	...	...	...	...
Texas	...	...	...	...	...	...	...	280	287	567
Total	9,555	913	49,191	12,466	248	174,894	1	3,499	7,900	11,400



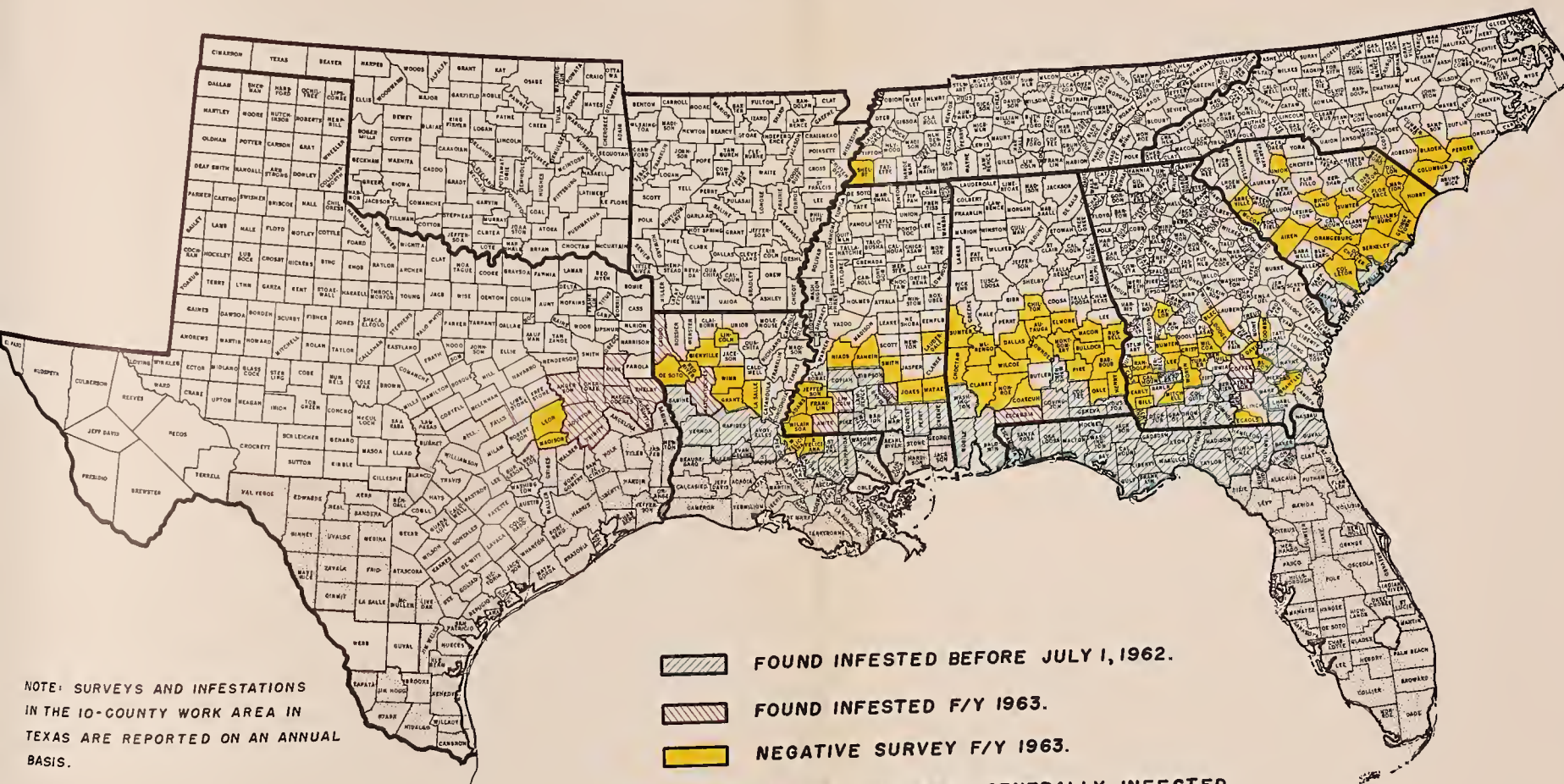






UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
 SOUTHERN REGION

SWEETPOTATO WEEVIL



NOTE: SURVEYS AND INFESTATIONS  
 IN THE 10-COUNTY WORK AREA IN  
 TEXAS ARE REPORTED ON AN ANNUAL  
 BASIS.



## WHITE-FRINGED BEETLE



Adult white-fringed beetle on inspector's thumb.

As of June 30, 1963, white-fringed beetles had been found on 1,436,022 acres in 281 counties of the States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. However, approximately one-third of the infested acreage, including all known infestation in 117 counties, had been treated at the close of the fiscal year. Although a million and a half acres represents a large land area, it should be pointed out that this acreage represents only one-half of 1 percent of the total land area in the 9 infested States.

The summer of 1963 was another year when the white-fringed beetle populations seemed to explode. Populations of this magnitude appear to come in cycles; however, there is a contributing factor. In the late forties and early fifties, much of the more heavily infested land was treated with DDT and in subsequent years with chlordane and dieldrin. The effectiveness of these treatments has dissipated and populations are again building up in farmlands, as re-treatments have not been made in many areas and the initial treatment has not kept pace with new finds. These previous soil treatments, for the most part, have kept crop damage suppressed. However, the white-fringed beetle in the spring of 1963 gave notice of its strong potential as a threat to the South's agriculture by the almost complete destruction of several fields of peas, cotton, corn, and peanuts, along with noticeable damage to other crops and to gardens.

In the 9 States, white-fringed beetles were found on some 134,000 additional acres in 18 new counties. Approximately 70 percent of the new acreage was located in Georgia, Louisiana, and Mississippi. About 720 of these additional acres were in Arkansas, where a determined effort is being made to eradicate the insect at every location where it is found.

Although it has not been possible to treat all new areas of infestation and to re-treat when the residual of the previous treatments has become ineffective, a continuing effort has been made to apply needed control treatments in



support of the regulatory program and to treat all newly found infestations in Arkansas and South Carolina. Also, treatments have been made to as many outlying infestations as possible in the other States. Because of the limitation of funds for all cooperators, it is becoming increasingly difficult to continue at a necessary rate with treatment of outlying infestations. In view of this and the limitation on re-treatment of farmland, it can be expected that regulatory problems are going to increase correspondingly and, no doubt, crop damage will be more widespread.



In searching for new infestations of white-fringed beetle by inspection for the adult beetle, the inspector looks for characteristic feeding signs, as displayed on this goldenrod plant.



Adult inspection method is being demonstrated to new inspectors by a staff member.





In the spring of the year, inspections are made for the larvae of the white-fringed beetle by digging around succulent perennials that will supply food throughout the winter.

Under certain conditions, delimiting by larval survey is more effective than by inspecting for the adult beetle.



This year, infestations of white-fringed beetle have been heavier in most of the area than at any time in the past decade. Damage in some instances closely parallels that of the early years, as illustrated by the pictures below.



White-fringed beetle infested cotton field near Repton, Alabama, pictured after third planting, 1963.



Poor stand in 15-acre infested cornfield in Baldwin County, Alabama, 1963.

Table 28.--White-Fringed Beetle Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection					Control		
	Surveyed		Found infested			Insecticide treatment (acres)		
	Properties	Acres <sup>1/</sup>	Properties	Acres	Counties	Ground	Air	Total
Alabama	9,781	...	392	15,314	4	21,506	213	21,719
Arkansas	3,797	...	51	720	2	412	1,396	1,808
Florida	1,875	...	56	3,290	...	251	...	251
Georgia	9,571	...	786	34,374	3	9,095	...	9,095
Louisiana	9,347	82,539	1,488	28,468	3	1,956	975	2,931
Mississippi	2,597	...	227	36,540	2	553	...	553
N. Carolina	35,835	...	614	7,548	...	4,761	...	4,761
Oklahoma	52	...	...	...	...	...	...	...
S. Carolina	6,938	...	64	682	...	682	...	682
Tennessee	20,114	...	463	7,083	4	7,013	9,000	16,013
Texas	80	...	...	...	...	...	...	...
Total	99,987	82,539	4,141	134,019	18	46,229	11,584	57,813

<sup>1/</sup> The reporting of acres surveyed on White-Fringed Beetle Program is optional (by state).

Table 29.--White-Fringed Beetle Program, Regulatory Activities--Inspection for Certification  
Fiscal Year 1963

State	Inspection for certification						
	Properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Other
		Nursery	Other				
Alabama	1,659	7,565	13,008	30	414	218	8,320
Florida	1,222	416	...	...	1,081	663	...
Georgia	488	568	3,252	7	60	44	17
Louisiana	162	3,375	...	...	...	18	...
Mississippi	777	1,367	2,012	1	64	260	16
North Carolina	151	473	12	...	143	37	...
South Carolina	18	113	...	...	...	...	...
Tennessee	808	1,263	2,047	...	50	14	21
Texas	1	2	...	...	...	...	...
Total	5,286	15,142	20,331	38	1,812	1,254	8,374

Table 30.--White-Fringed Beetle Program, Regulatory Activities--Certification and Commodity Treatment  
Fiscal Year 1963

State	Acres treated for certification		Commodity lots treated					Total
	Soil	Foliage	Fumigated	Clipped	Soaked	Heated	Other	
Alabama	5,067	990	142	451	121	27,099	917	28,730
Arkansas	25	...	...	...	...	...	12	12
Florida	53	...	...	...	...	...	19	19
Georgia	1,468	4	2,420	22,631	127	657	4,144	29,979
Louisiana	274	...	3	2	...	...	3	8
Mississippi	1,673	65	70	...	...	...	10,519	10,589
North Carolina	361	10	8	196	3	...	55	262
South Carolina	2	...	7	...	...	...	4	11
Tennessee	778	30	32	905	192	...	14	1,143
Texas	2	...	...	...	1	...	...	1
Total	9,703	1,099	2,682	24,185	444	27,756	15,687	70,754



Table 31.--White-Fringed Beetle Program, Regulatory Activities--Commodities Treated  
Fiscal Year 1963

Commodities	Lots treated										
	Ala.	Ark.	Fla.	Ga.	La.	Miss.	N. C.	S. C.	Tenn.	Texas	Total
Fruits and Vegetables	66	...	...	...	...	...	...	...	...	...	66
Nursery Stock	451	...	...	22,698	4	...	203	...	1,091	1	24,448
Crain	...	...	...	4	...	...	...	...	...	...	4
Soil	27,800	...	...	6,015	4	70	9	7	42	...	33,947
Transplants	...	...	...	70	...	...	...	...	7	...	77
Machinery and Equipment	173	12	19	692	...	10,519	50	4	...	...	11,469
Other	240	...	...	500	...	...	...	...	3	...	743
Total	28,730	12	19	29,979	8	10,589	262	11	1,143	1	70,754

Table 32.--Status of White-Fringed Beetle Program, June 30, 1963

State	Estimated acres found infested from beginning of program <sup>1/</sup>	Estimated infested acres treated, treatment still effective <sup>2/</sup>	Estimated infested acres remaining to be treated	Number counties	
				Found infested from beginning of program	All known infestations treated
Alabama	339,393	104,362	235,031	43	16
Arkansas	6,532	6,522	10	6	5
Florida	144,078	50,966	93,112	9	...
Georgia	443,398	119,205	324,193	85	22
Louisiana	65,432	26,578	38,854	16	4
Mississippi	280,540	22,882	257,658	54	16
N. Carolina	58,452	37,881	20,571	32	26
S. Carolina	7,364	7,364	...	12	12
Tennessee	90,833	36,302	54,531	24	16
Total	1,436,022	412,062	1,023,960	281	117

<sup>1/</sup> Includes acreage on which infestation has been eradicated.

<sup>2/</sup> Does not include periphery or "buffer" zone, retreatment, or precautionary treatment of noninfested land.

Table 33.--White-Fringed Beetle Program, Status of Populations, June 30, 1963

State	No infestation found		Light populations		Moderate populations		Heavy populations		Total	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Alabama	104,354	31	141,766	42	79,514	23	13,759	4	339,393	100
Arkansas	6,502	99	20	<u>1/</u>	...	...	10	<u>1/</u>	6,532	100
Florida	75,132	52	31,340	22	25,696	18	11,910	8	144,078	100
Georgia	154,928	35	203,457	46	72,591	16	12,422	3	443,398	100
Louisiana	42,214	65	19,952	30	2,228	3	1,038	2	65,432	100
Mississippi	71,555	26	151,556	54	47,372	17	10,057	3	280,540	100
N. Carolina	26,909	46	20,405	35	10,086	17	1,052	2	58,452	100
S. Carolina	6,682	91	682	9	...	...	...	...	7,364	100
Tennessee	26,398	29	46,234	51	16,923	19	1,278	1	90,833	100
Total	514,674	36	615,412	43	254,410	18	51,526	3	1,436,022	100

1/ Less than 1 percent.

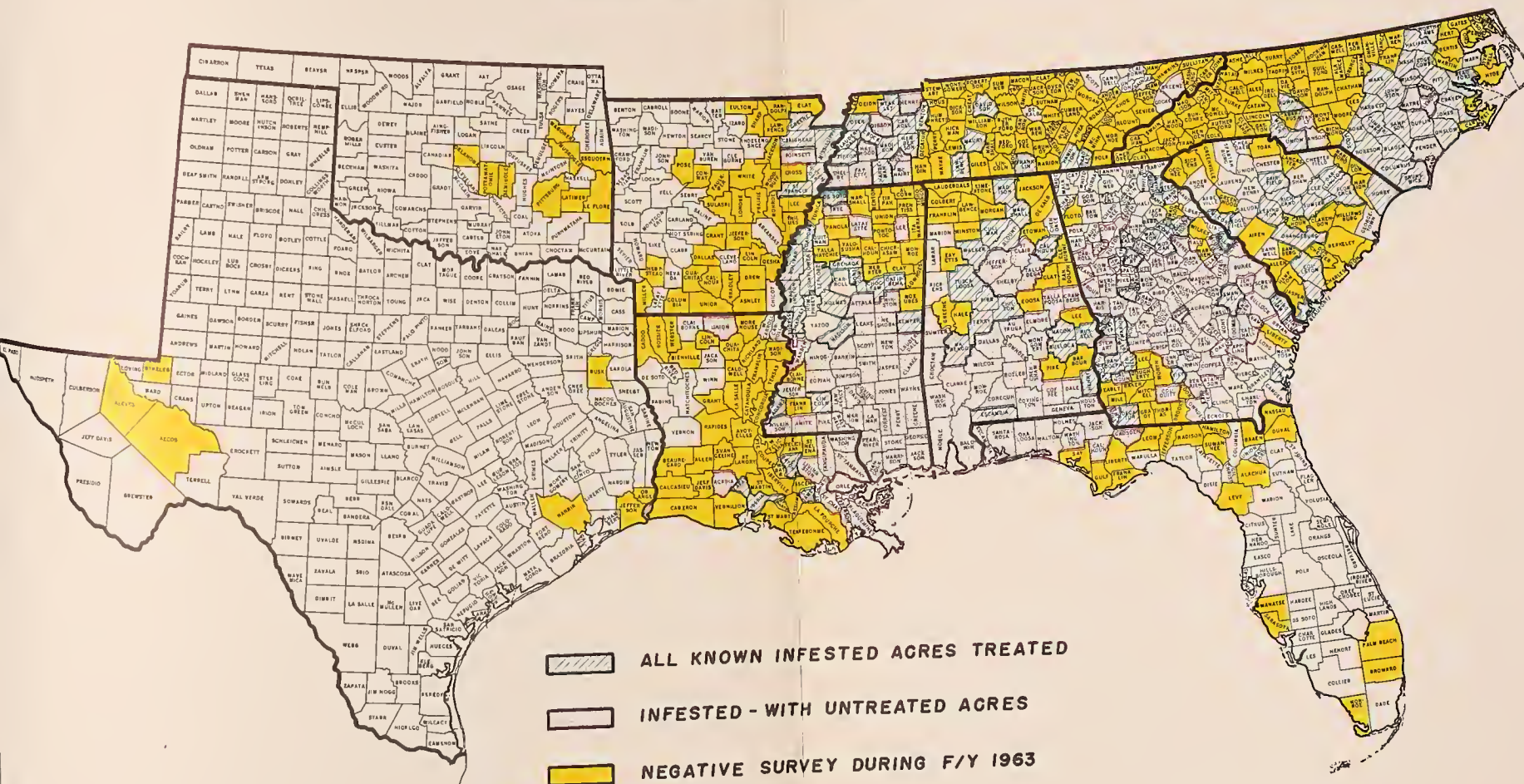






UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
SOUTHERN REGION

WHITE - FRINGED BEETLE





## WITCHWEED

Since the discovery of witchweed in a contiguous area of North and South Carolina in 1956, no additional infestations have been found at any point far removed from the initially infested area. The only extension of infestation discovered in 1963 in a county not previously known to be infested consisted of a 2-acre field in Anson County, North Carolina. Anson County is immediately adjacent to Richmond County, North Carolina, and Chesterfield County, South Carolina, both of which were already known to be infested.

Damage from witchweed, at the time of discovery and for 2 or more years thereafter, proved that this plant is one of the most serious economic pests to reach this country. At the beginning of the eradication program, two methods were selected as possible means of eradication. One consisted of growing trap crops on infested farms in order to germinate witchweed seed in the soil. Such crops, with the witchweed plants attached to them, were to be destroyed before new witchweed seed could mature. The second method consisted of applying 2,4-D to witchweed plants before seeds matured. Applications were made in cornfields, along roadsides, and on other areas where the herbicide would not affect susceptible plants of economic value. The growing of trap crops was found to be of little value. Early spring crops could be produced but could not be properly plowed under and destroyed in sandy soil. Midseason crops could not be grown because of heat, drought, and insect depredation. For these reasons, that method was practically abandoned in favor of 2,4-D.

Repeated treatments with 2,4-D have produced much better results than were expected originally. Fields that were not producing corn at the beginning of the program because of witchweed infestation are now producing normal crops. Many cornfields where witchweed was very prevalent in the beginning now produce few or no witchweed plants. These results, augmented by numerous tests at the Witchweed Laboratory, seem to prove quite conclusively that witchweed seeds do not remain viable nearly so long under soil and climatic conditions in the Carolinas as they did in tests conducted in South Africa. These indications are encouraging. Scientists in Africa reported that some seed remained viable in soil for 25 years. Scientists at the Whiteville Laboratory are inclined to believe that all seed in the infested area will deteriorate in soil within approximately 5 years.

There is great need for a quick, positive method for eradicating witchweed in small isolated infestations. Practical field-scale tests with soil fumigants indicate that Brozone, a low-volatile methyl bromide formulation, may be effective in preventing germination of witchweed seeds in the soil.

An important phase of the witchweed program consists of preventing spread of infestation through the movement of various items and commodities from infested to noninfested areas. Studies prior to and during the early stages of the quarantine resulted in the development of heat treatments, equipment-cleaning methods, and fumigation schedules that continue to be used effectively.



At the Methods Improvement Laboratory in Whiteville, North Carolina, numerous promising tests are being conducted in an attempt to develop chemical treatments that may be used to kill witchweed in crops that are not tolerant to 2,4-D, or to kill the grasses that serve as hosts for witchweed in such crops.



Cornfield in Columbus County, North Carolina, heavily infested with witchweed, July 1963.





Test areas being fumigated with Brozone at different dosages to check the effectiveness of this material in eradicating witchweed seed. The material was applied by tractor-drawn applicator and the fumigated area immediately covered with polyethelene sheeting, as shown below.



Table 34.--Witchweed Program, Survey and Control Activities, Fiscal Year 1963

State	Survey and detection				Control	
	Surveyed		Found infested		Properties	Acres treated Herbicide
	Properties	Acres	Properties	Acres		
Alabama	1,730	36,253	...	...	...	...
Arkansas	96	1,336	...	...	...	...
Florida	1,002	20,856	...	...	...	...
Georgia	1,640	18,727	...	...	...	...
Louisiana	1,223	22,957	...	...	...	...
Mississippi	983	15,982	...	...	...	...
North Carolina	64,160	666,162	818	23,235	14,529	354,890
Oklahoma	316	6,253	...	...	...	...
South Carolina	22,402	352,159	153	1,929	1,750	104,093
Tennessee	932	12,955	...	...	...	...
Texas	1,268	24,686	...	...	...	...
Total	95,752	1,178,326	971	25,164	16,279	458,983

Table 35.--Witchweed Program, Regulatory Activities, Fiscal Year 1963

State	Inspection for certification						Commodity lots treated			
	Properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Fumigated	Dipped	Other	Total
		Nursery	Other							
North Carolina	5,677	311	6,447	1,698	935	319	1,626	5	1,928	3,559
South Carolina	655	...	11,391	24	12	...	3,951	...	12,909	16,860
Total	6,332	311	17,838	1,722	947	319	5,577	5	14,837	20,419

Table 36.--Witchweed Program, Regulatory Activities--Commodities Treated  
Fiscal Year 1963

Commodities	Lots treated		
	North Carolina	South Carolina	Total
Fruits and Vegetables	62	...	62
Nursery Stock	7	...	7
Grain	433	...	433
Cotton Products	3	18	21
Transport	...	1	1
Soil	555	11,854	12,409
Transplants	66	...	66
Machinery and Equipment	1,277	4,987	6,264
Other	1,156	...	1,156
Total	3,559	16,860	20,419

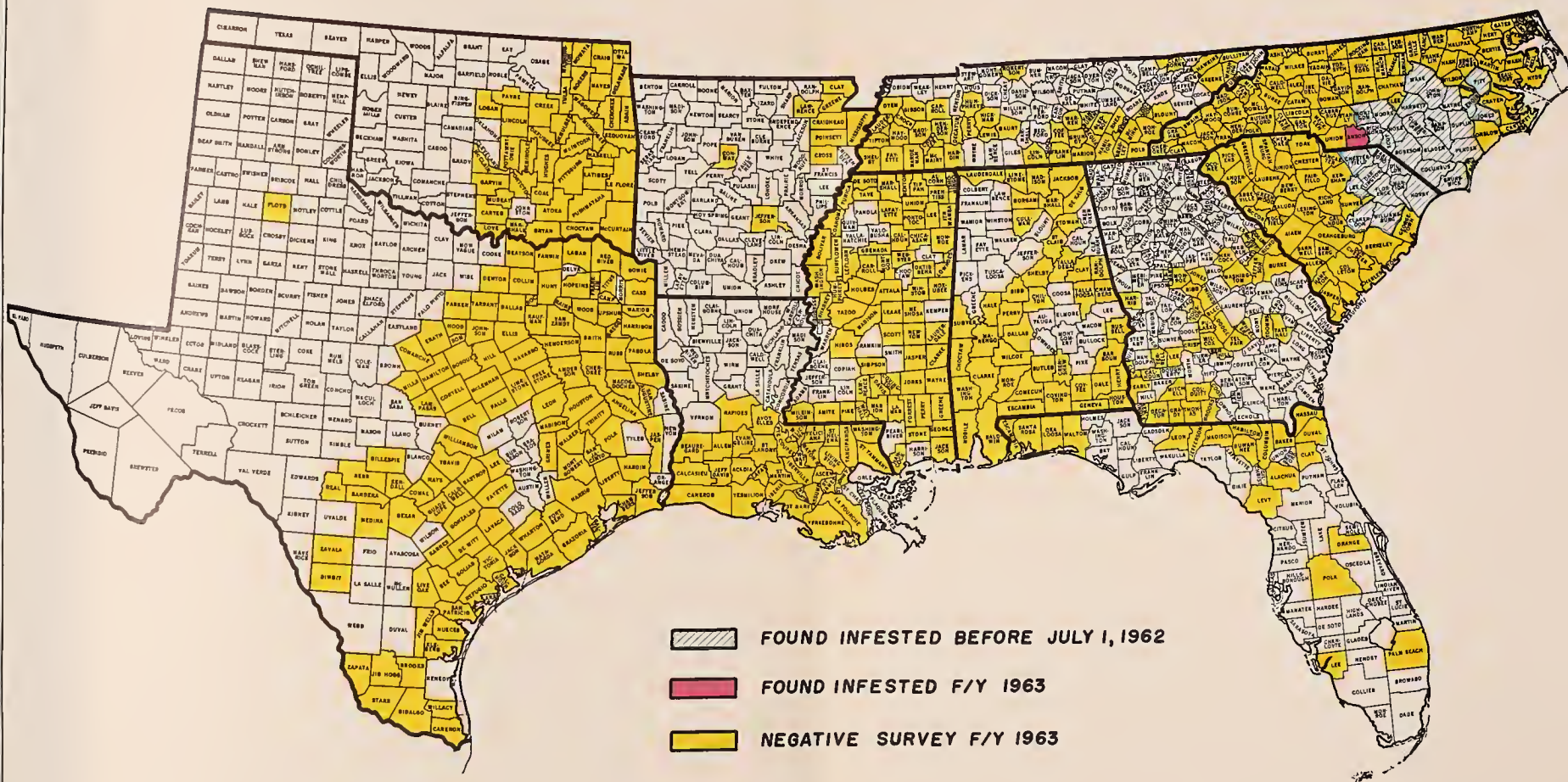






UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION  
SOUTHERN REGION

WITCHWEED

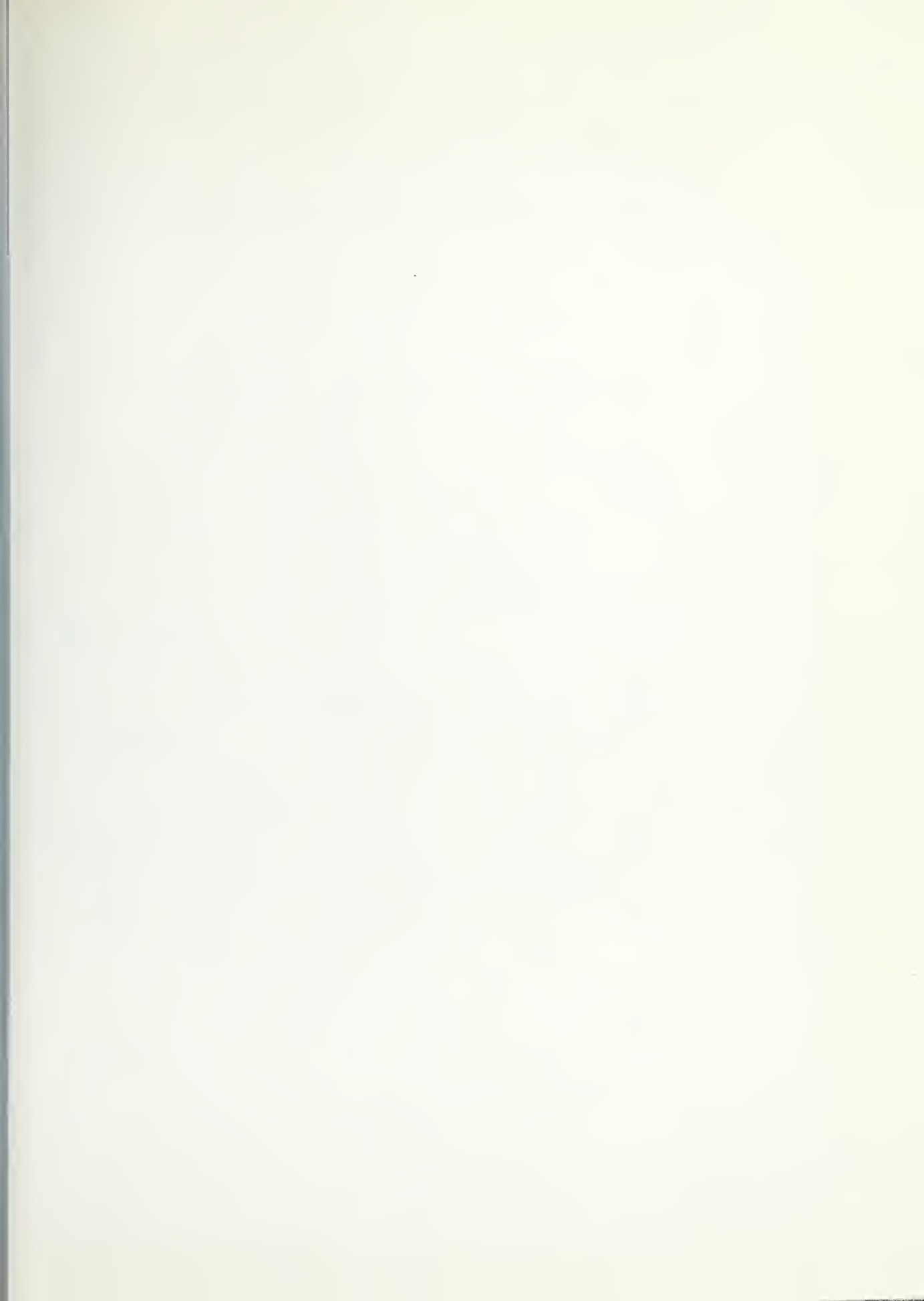
















PLANT PEST CONTROL  
COOPERATIVE PROGRAMS

**WESTERN REGION**

FISCAL YEAR

**1963**

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION



# PLANT PEST CONTROL

## COOPERATIVE

## PROGRAMS



FISCAL YEAR

# 1963



# TABLE OF CONTENTS

Page No.

Chart - Western Plant Pest Control Region	2
Map - Western Region - Plant Pest Control Division	3
Plant Pest Control Cooperative Programs	4
Barberry Eradication	6
Map - Barberry Eradication - June 30, 1963	7
Photographs	8
Chart - Present Status, Progress, and Future Requirements, 1918 - 1963	9
Chart - Properties Cleared and Barberry Bushes Destroyed	10
Photographs	11
Chart - Summary of Associated Activities	12
Grasshoppers	13
Map - Grasshopper Adult Survey - Fall 1962	14
Photographs	15
Map - Grasshopper Control - Rangeland - 1963 Season	16
Photographs	17
Chart - Survey and Detection Report	18
Photographs	19
Chart - Work Report - 1962 Adult Grasshopper Survey	20
Photographs	21
Chart - Summary of Associated Activities	22
Map - Grasshopper - Areas with History of Infestations	23
Japanese Beetle	24
Map - Japanese Beetle Eradication - California - FY 1963	25
Photographs	26
Map - Japanese Beetle Trap Locations	27
Chart - Summary of Associated Activities	28
Khapra Beetle	29
Map - Khapra Beetle Eradication	30
Photographs	31
Chart - Survey and Control Accomplishment	32
Photographs - Safety	33
Chart - Summary of Associated Activities	34
Mexican Fruit Fly	35
Photographs	36
Chart - Summary of Associated Activities	37
Mormon Crickets	38
Map - Mormon Cricket Control - Rangeland	39
Chart - Survey and Detection Report	40
Map - Mormon Cricket Adult Survey - Fall 1963	41
Chart - Summary of Associated Activities	42
Peach Mosaic Eradication	43
Map - Peach Mosaic Disease Control - June 30, 1963	45
Chart - Nursery Inspection - Regulated Areas	46
Chart - Summary of Inspections	47
Photographs	48
Chart - Summary of Associated Activities	49

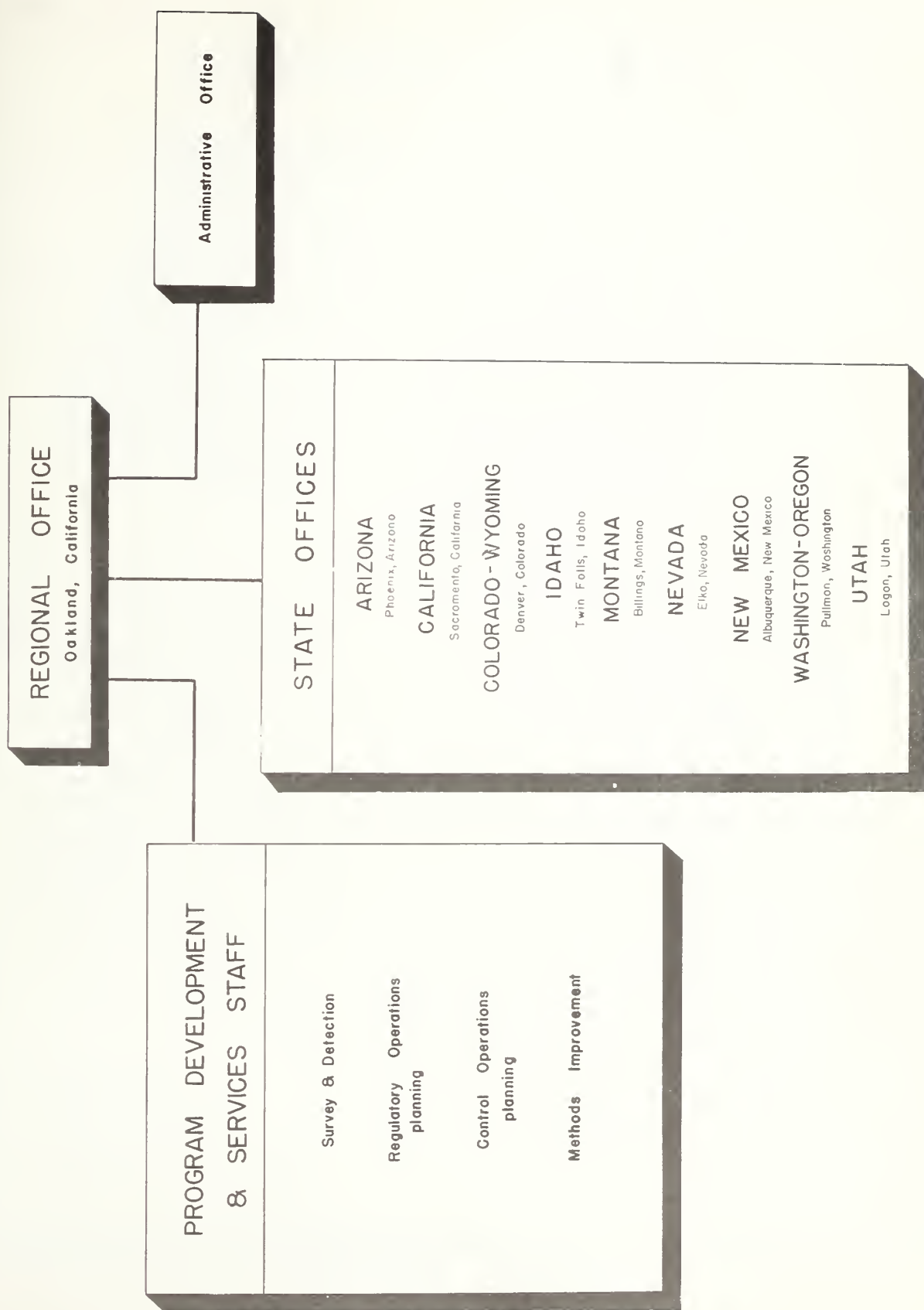


## TABLE OF CONTENTS (Continued)

Page No.

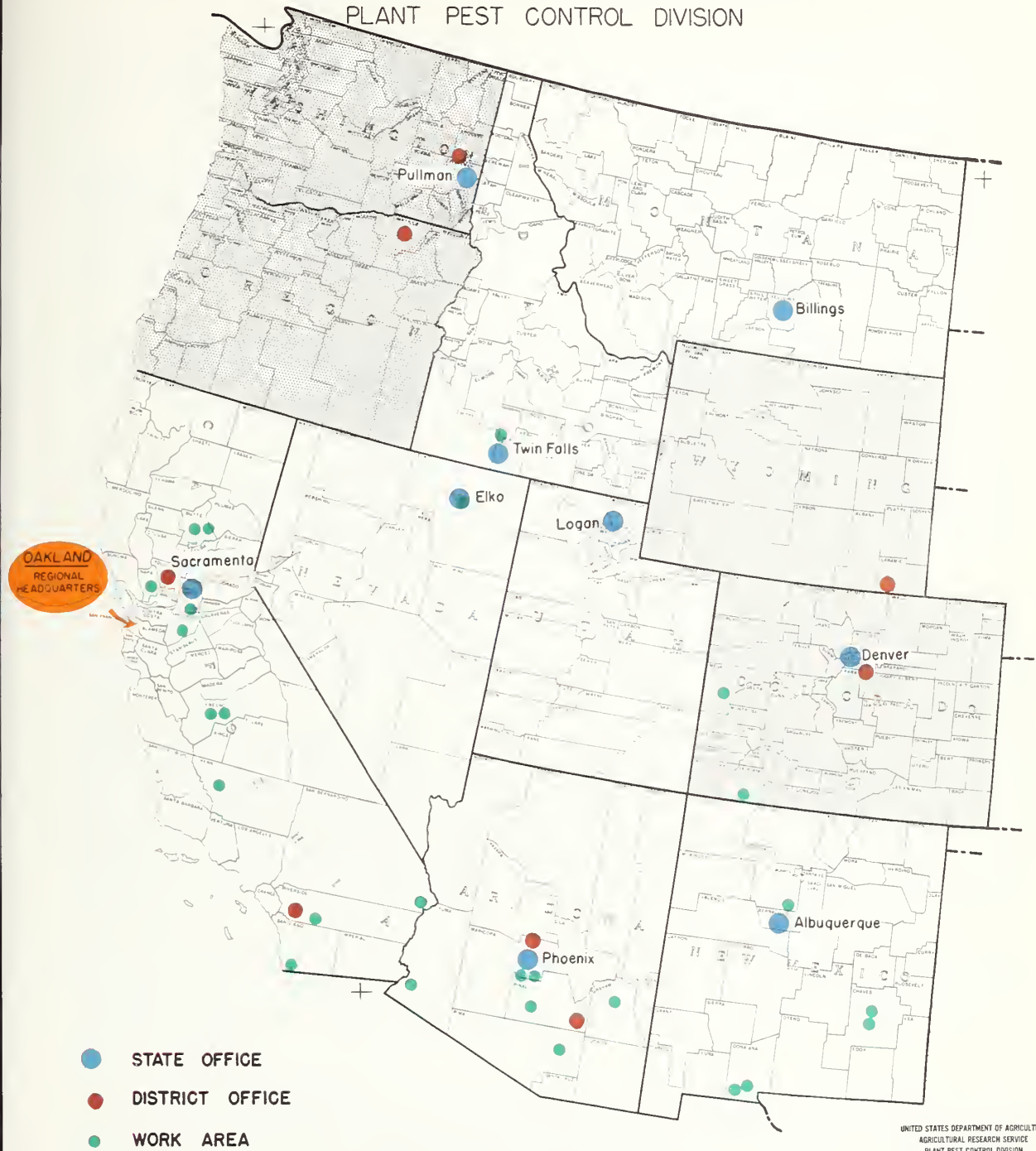
Pink Bollworm	50
Map - Pink Bollworm Control - Eradication - June 30, 1963	52
Photographs	53
Map - Pink Bollworm Eradication - FY 1963	54
Photographs	55
Chart - Control Accomplishment Report	56
Chart - Regulatory Activity Report	57
Chart - Survey and Detection Report	58
Photographs	59
Chart - Summary of Associated Activities	60
Plant Pest Survey	
Cooperative Economic Insect Survey	61
Beet Leafhopper	61
Potato Psyllid	62
European Pine Shoot Moth	62
Halogeton	63
Insect Detection	63
Cotton Boll Weevil	63
Hall Scale	63
Golden Nematode	63
Public Relations	64
Fruit Flies	64
Map - Cooperative Economic Insect Survey - June 30, 1963	65
State Survey Coordinators for Economic Insect Survey	66
Reports	
Survey Entomologists	67
Photographs - Beet Leafhopper Program	68
Map - Beet Leafhopper Survey	69
Photographs - Beet Leafhopper Program	70
Chart - Survey and Detection Report	71
Photographs - Public Relations	72
Chart - Summary of Associated Activities	73
Photographs - Safeguards	74

# WESTERN PLANT PEST CONTROL REGION





PLANT PEST CONTROL DIVISION



UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION  
WESTERN REGION  
JUNE 30, 1963





## Plant Pest Control Cooperative Programs

The balance sheet reflecting Western Region program accomplishment and status for FY 1963 presents an encouraging picture. Progress against the pests which we are cooperatively attempting to eradicate is gratifying.

Khapra Beetle Eradication - Although our cooperators and the Division have maintained a high level of inspection not only within the three formerly infested states, but throughout the Region, the last infestation of this pest was discovered in Arizona, July 11, 1962. Involved properties were promptly fumigated. The pest is not known to occur in the Western States at this time.

Pink Bollworm Eradication - While we do not share the convictions of our Arizona cooperators that this pest has been eradicated from central Arizona, the fact that only a single larva was found in the eradication area in 1962 is heartening. That find made by gin trash inspection early in the harvest season resulted in the precautionary treatment of the smallest planted cotton acreage since the start of the program in 1958. Only two moths were picked up in light traps during the year. Each of these was recovered at considerable distance from planted cotton and by traps placed in "brush country" located in suspected "fly ways" of the moth.

We have maintained the intensive survey and inspection pace set for this eradication effort, but have sharply restricted the area of activity to some 50 thousand acres only, of central Arizona's most susceptible cotton, including stub.

Japanese Beetle Eradication - The thoroughness with which the Division and California cooperators applied suppressive measures last year; i.e., extensive and thoroughly adequate foliar sprays and dust, plus maximum safe soil treatments, has proven wise. Saturation trapping and concentrated ocular examinations of abundant host material have failed to reveal even a single, naturally occurring, specimen of Japanese beetle in the eradication area. The last such find was made June 18, 1962.

The Survey and Detection program aimed at this pest has been maintained at a consistently high level. The territory embraced within this intensively surveyed sector includes all likely adjacent environs of the formerly infested territory circa Sacramento.

Hall Scale Eradication - The wisdom of keeping watch on a former eradication area was demonstrated during the year by the discovery of an isolated infestation of Hall scale which had persisted, undetected, on seven commercially inconsequential flowering peach and almond hosts growing in a secluded canyon in the vicinity of Chico, California. These trees were immediately removed and destroyed, as were other host plants thereabouts.

Peach Mosaic Eradication - The momentum which prompt discovery and removal of peach mosaic diseased trees has given this eradication program during the last four years continued during 1963. It is a satisfaction to report that no diseased trees have been found in California's large peach producing area north of the Tehachapi range.

The cooperative vector control experiment which Entomology Research Division has been carrying out in San Bernardino County, California, for the last three years has been continued during FY 1963. The disease incidence in this control plot has declined from 10.5 percent to 4.7 percent. It is hoped that this declination rate will persist.

Cooperative Economic Insect Survey - The Division's cooperators in this important program have continued to submit informative and timely insect condition reports. This has been true with regard to states which are under contract and those which are participating on a purely voluntary basis.

Several pests have required particularly alert attention. These have included the boll weevil, a threat from northern Mexico and western Texas; golden nematode, which might have been introduced from the Scandinavian Countries with potatoes illegally brought into the Pacific Northwest; burrowing nematode; and Mexican fruit fly. Anastrepha ludens occurrence was not discovered until mid-summer 1963, when four specimens were recovered in detection traps being operated in the vicinity of Nogales, Arizona. This retrieval location is not far from commercial citrus in southern Arizona where, should the pest become established, it could be a real threat not only to Arizona's important citrus production, but to California's far more extensive citrus industry.

Grasshopper Control - Grasshoppers increased very markedly in Montana, Wyoming, and Idaho. They were of substantial importance in Utah, portions of Colorado, Arizona and Oregon. This rise in populations and expansion of areas infested was favored by weather and vegetative conditions hospitable to grasshopper development and survival. Because of weather conditions adverse to grasshoppers, expected populations in southern Colorado, New Mexico, and portions of Nevada and Utah declined sharply. Since our cooperators in some of the northern states chose not to participate in cooperative rangeland grasshopper control, most of the work which was accomplished was performed on Federal domain to protect valuable forage cover thereon and to anticipate migrations. This circumstance permitted the Division to join the Entomology Research Division in important experimental tests of nonchlorinated hydrocarbon insecticides with short residual life. We were also able to demonstrate the feasibility of low volume applications without sacrificing control results. Preliminary, but persuasive, evidence indicates the possibility of reducing total volume of insecticide applications by as much as 75 percent. The amplified section of this report dealing with grasshopper control FY 1963 elaborates these factors.

## Barberry Eradication

Many fields of wheat were heavily infected with black stem rust in several eastern Montana and Wyoming counties in 1962. Losses ranged up to 75 percent in Prairie, Wibaux, Dawson, and Fallon Counties, Montana. Cheyenne, a winter wheat variety, was widely planted there and was very susceptible to infection. Statewide losses in Montana, occasioned by stem rust, amounted to about 10 percent of the winter wheat crop. In Wyoming the loss was estimated to be about 6 percent. Colorado losses were estimated to be 1 percent. In other states losses of grains to rusts were inconsequential.

Initial surveys are almost complete in seven southwestern Colorado counties originally heavily infested by native barberry, Berberis fendleri. Rework of the areas is in progress, and on 61 square miles re-examined, several thousand bushes were found and eradicated. During the fiscal year, 148 properties were inspected for B. vulgaris on a rework basis in seven additional Colorado counties. Twenty-six old and three new properties were found infested; 270 bushes were eradicated; and five properties were inactivated on the basis of two successive negative inspections.

Principal activity in Washington entailed rework of the City of Spokane and the Spokane Valley. In the course of survey substantial numbers of new barberry bushes were found and destroyed. The progress of control in the city and valley has been satisfactory.

In Wyoming 28 properties in 5 counties were reworked on an intensive basis. One property was found infested in Goshen County. During the year the four large fruiting bushes found there three years ago were removed by the Division of Plant Industry, Wyoming Department of Agriculture.

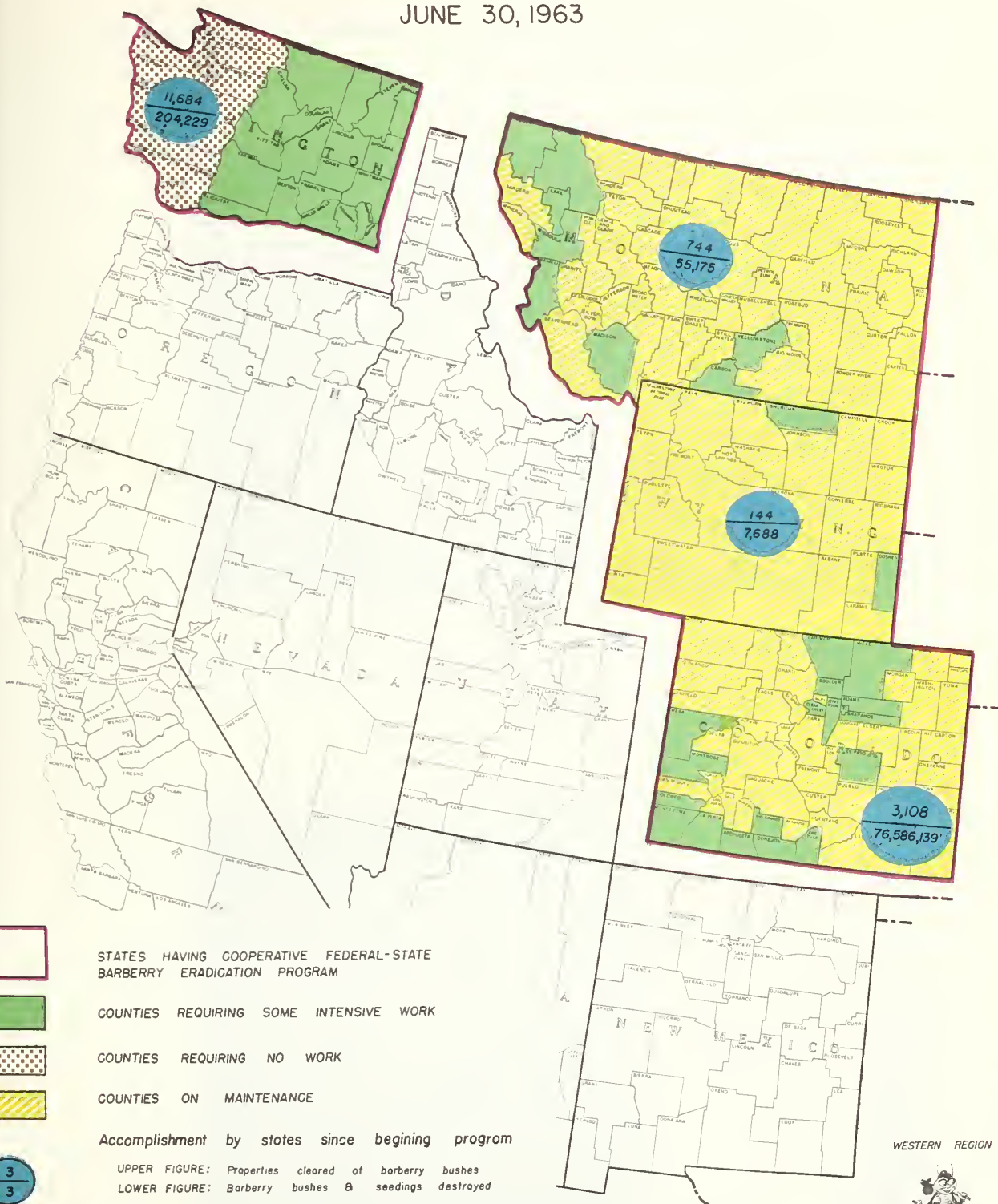
Rust surveys were again conducted throughout the western wheat states during the growing season. Nurseries making application for interstate shipment of Berberis in the states of California, Colorado, Montana, Oregon, Utah, and Washington were inspected and approved under applicable provisions of Quarantine No. 38. Nursery dealers were also approved in California, Colorado, Oregon, and Washington. Seed dealers were approved in California, Montana, and Washington.





# BARBERRY ERADICATION

JUNE 30, 1963



Summary of accomplishments all states Western Region

PROPERTIES CLEARED — — — — 15,680

BUSHES & SEEDLINGS DESTROYED — 76,853,231

WESTERN REGION



PLANT PEST CONTROL DIVISION  
 ARS USDA  
 JUNE 30, 1963





# Barberry

8

*PRECISE PLANNING -- CAREFUL EXECUTION  
EXCELLENT RESULTS*



*Identification jackets worn by personnel surveying within heavily populated areas (Spokane, Washington). These have proven to be very good for public relations.*



*Remains of a large barberry bush -- canes cut and ready to be painted with herbicide.*



# Barleym

Barleym is a...  
Barleym is a...



Barleym is a...

Barleym is a...

PRESENT STATUS, PROGRESS, AND FUTURE REQUIREMENTS, 1918 - 1963

Program Barberry

Fiscal Year 1963

S Q U A R E   M I L E S																	PROPERTIES				BARBERRY BUSHES DESTROYED		
State	(1)	(2)	Number Covered						Number Requiring Work One or More Times				Total Found To Date	Number Needing One or More Reinspections	Number Completed	Common	Native	(17)					
			Initial Work		Rework		Farmstead		Intensive		Rework												
			Farmstead	Intensive	Farmstead	Intensive	Initial	Rework	Initial	Rework													
Colo.	74,696	69,051	5,645	9,148	5,493	0	0	5	220	74,471	3,108	606	2,502	102,827	76,483,312	76,586,139							
Mont.	146,316	146,316	426	6,044	760	0	0	0	27	146,289	744	48	696	55,175	0	55,175							
Wash.	29,872	29,872	2,634	239	1,915	0	0	56	880	28,936	11,684	11,225	459	204,229	0	204,229							
Wyo.	94,487	93,929	558	7,367	1,276	0	0	0	9	93,920	144	5	139	7,688	0	7,688							
TOTALS	345,371	339,168	9,263	22,798	9,444	0	0	61	1,136	343,616	15,680	11,884	3,796	369,919	76,483,312	76,853,231							





PROPERTIES CLEARED AND BARBERRY BUSHES DESTROYED

Program Barberry

Fiscal Year 1963

State	Square Miles Worked		Properties Found Infested		Old Properties Inspected	Properties Inactivated	Bushes Destroyed		Inspections	
	Initial	Rework	New	Old			Common	Native	Nursery	Dealer
Colorado	0	127	5	146	328 <sup>323</sup>	27	270	65,985	9	0
Montana	0	4	0	3	7 <sup>12</sup>	0	228	0	5	1
Oregon	-	-	-	-	-	-	-	-	41	2
Washington	0	62	166	568	5,898	0	2,566	0	22	2
Wyoming	0	8	1	0	28 <sup>27</sup>	14	4	0	0	0
<i>Calif.</i> <i>Utah</i>										<i>32</i> <i>8</i>
Totals	0	201	172	717	6,260	41	3,068	65,985	77	45

Date	Time	Locality	No. of birds	Sexes	Age	Remarks
Jan 1	10:00	...	...	...	...	...
Jan 2	11:00	...	...	...	...	...
Jan 3	12:00	...	...	...	...	...
Jan 4	13:00	...	...	...	...	...
Jan 5	14:00	...	...	...	...	...
Jan 6	15:00	...	...	...	...	...
Jan 7	16:00	...	...	...	...	...
Jan 8	17:00	...	...	...	...	...
Jan 9	18:00	...	...	...	...	...
Jan 10	19:00	...	...	...	...	...
Jan 11	20:00	...	...	...	...	...
Jan 12	21:00	...	...	...	...	...
Jan 13	22:00	...	...	...	...	...
Jan 14	23:00	...	...	...	...	...
Jan 15	24:00	...	...	...	...	...
Jan 16	25:00	...	...	...	...	...
Jan 17	26:00	...	...	...	...	...
Jan 18	27:00	...	...	...	...	...
Jan 19	28:00	...	...	...	...	...
Jan 20	29:00	...	...	...	...	...
Jan 21	30:00	...	...	...	...	...
Jan 22	31:00	...	...	...	...	...
Jan 23	32:00	...	...	...	...	...
Jan 24	33:00	...	...	...	...	...
Jan 25	34:00	...	...	...	...	...
Jan 26	35:00	...	...	...	...	...
Jan 27	36:00	...	...	...	...	...
Jan 28	37:00	...	...	...	...	...
Jan 29	38:00	...	...	...	...	...
Jan 30	39:00	...	...	...	...	...
Jan 31	40:00	...	...	...	...	...
Jan 32	41:00	...	...	...	...	...
Jan 33	42:00	...	...	...	...	...
Jan 34	43:00	...	...	...	...	...
Jan 35	44:00	...	...	...	...	...
Jan 36	45:00	...	...	...	...	...
Jan 37	46:00	...	...	...	...	...
Jan 38	47:00	...	...	...	...	...
Jan 39	48:00	...	...	...	...	...
Jan 40	49:00	...	...	...	...	...
Jan 41	50:00	...	...	...	...	...
Jan 42	51:00	...	...	...	...	...
Jan 43	52:00	...	...	...	...	...
Jan 44	53:00	...	...	...	...	...
Jan 45	54:00	...	...	...	...	...
Jan 46	55:00	...	...	...	...	...
Jan 47	56:00	...	...	...	...	...
Jan 48	57:00	...	...	...	...	...
Jan 49	58:00	...	...	...	...	...
Jan 50	59:00	...	...	...	...	...
Jan 51	60:00	...	...	...	...	...
Jan 52	61:00	...	...	...	...	...
Jan 53	62:00	...	...	...	...	...
Jan 54	63:00	...	...	...	...	...
Jan 55	64:00	...	...	...	...	...
Jan 56	65:00	...	...	...	...	...
Jan 57	66:00	...	...	...	...	...
Jan 58	67:00	...	...	...	...	...
Jan 59	68:00	...	...	...	...	...
Jan 60	69:00	...	...	...	...	...
Jan 61	70:00	...	...	...	...	...
Jan 62	71:00	...	...	...	...	...
Jan 63	72:00	...	...	...	...	...
Jan 64	73:00	...	...	...	...	...
Jan 65	74:00	...	...	...	...	...
Jan 66	75:00	...	...	...	...	...
Jan 67	76:00	...	...	...	...	...
Jan 68	77:00	...	...	...	...	...
Jan 69	78:00	...	...	...	...	...
Jan 70	79:00	...	...	...	...	...
Jan 71	80:00	...	...	...	...	...
Jan 72	81:00	...	...	...	...	...
Jan 73	82:00	...	...	...	...	...
Jan 74	83:00	...	...	...	...	...
Jan 75	84:00	...	...	...	...	...
Jan 76	85:00	...	...	...	...	...
Jan 77	86:00	...	...	...	...	...
Jan 78	87:00	...	...	...	...	...
Jan 79	88:00	...	...	...	...	...
Jan 80	89:00	...	...	...	...	...
Jan 81	90:00	...	...	...	...	...
Jan 82	91:00	...	...	...	...	...
Jan 83	92:00	...	...	...	...	...
Jan 84	93:00	...	...	...	...	...
Jan 85	94:00	...	...	...	...	...
Jan 86	95:00	...	...	...	...	...
Jan 87	96:00	...	...	...	...	...
Jan 88	97:00	...	...	...	...	...
Jan 89	98:00	...	...	...	...	...
Jan 90	99:00	...	...	...	...	...
Jan 91	100:00	...	...	...	...	...
Jan 92	101:00	...	...	...	...	...
Jan 93	102:00	...	...	...	...	...
Jan 94	103:00	...	...	...	...	...
Jan 95	104:00	...	...	...	...	...
Jan 96	105:00	...	...	...	...	...
Jan 97	106:00	...	...	...	...	...
Jan 98	107:00	...	...	...	...	...
Jan 99	108:00	...	...	...	...	...
Jan 100	109:00	...	...	...	...	...
Jan 101	110:00	...	...	...	...	...
Jan 102	111:00	...	...	...	...	...
Jan 103	112:00	...	...	...	...	...
Jan 104	113:00	...	...	...	...	...
Jan 105	114:00	...	...	...	...	...
Jan 106	115:00	...	...	...	...	...
Jan 107	116:00	...	...	...	...	...
Jan 108	117:00	...	...	...	...	...
Jan 109	118:00	...	...	...	...	...
Jan 110	119:00	...	...	...	...	...
Jan 111	120:00	...	...	...	...	...
Jan 112	121:00	...	...	...	...	...
Jan 113	122:00	...	...	...	...	...
Jan 114	123:00	...	...	...	...	...
Jan 115	124:00	...	...	...	...	...
Jan 116	125:00	...	...	...	...	...
Jan 117	126:00	...	...	...	...	...
Jan 118	127:00	...	...	...	...	...
Jan 119	128:00	...	...	...	...	...
Jan 120	129:00	...	...	...	...	...
Jan 121	130:00	...	...	...	...	...
Jan 122	131:00	...	...	...	...	...
Jan 123	132:00	...	...	...	...	...
Jan 124	133:00	...	...	...	...	...
Jan 125	134:00	...	...	...	...	...
Jan 126	135:00	...	...	...	...	...
Jan 127	136:00	...	...	...	...	...
Jan 128	137:00	...	...	...	...	...
Jan 129	138:00	...	...	...	...	...
Jan 130	139:00	...	...	...	...	...
Jan 131	140:00	...	...	...	...	...
Jan 132	141:00	...	...	...	...	...
Jan 133	142:00	...	...	...	...	...
Jan 134	143:00	...	...	...	...	...
Jan 135	144:00	...	...	...	...	...
Jan 136	145:00	...	...	...	...	...
Jan 137	146:00	...	...	...	...	...
Jan 138	147:00	...	...	...	...	...
Jan 139	148:00	...	...	...	...	...
Jan 140	149:00	...	...	...	...	...
Jan 141	150:00	...	...	...	...	...
Jan 142	151:00	...	...	...	...	...
Jan 143	152:00	...	...	...	...	...
Jan 144	153:00	...	...	...	...	...
Jan 145	154:00	...	...	...	...	...
Jan 146	155:00	...	...	...	...	...
Jan 147	156:00	...	...	...	...	...
Jan 148	157:00	...	...	...	...	...
Jan 149	158:00	...	...	...	...	...
Jan 150	159:00	...	...	...	...	...
Jan 151	160:00	...	...	...	...	...
Jan 152	161:00	...	...	...	...	...
Jan 153	162:00	...	...	...	...	...
Jan 154	163:00	...	...	...	...	...
Jan 155	164:00	...	...	...	...	...
Jan 156	165:00	...	...	...	...	...
Jan 157	166:00	...	...	...	...	...
Jan 158	167:00	...	...	...	...	...
Jan 159	168:00	...	...	...	...	...
Jan 160	169:00	...	...	...	...	...
Jan 161	170:00	...	...	...	...	...
Jan 162	171:00	...	...	...	...	...
Jan 163	172:00	...	...	...	...	...
Jan 164	173:00	...	...	...	...	...
Jan 165	174:00	...	...	...	...	...
Jan 166	175:00	...	...	...	...	...
Jan 167	176:00	...	...	...	...	...
Jan 168	177:00	...	...	...	...	...
Jan 169	178:00	...	...	...	...	...
Jan 170	179:00	...	...	...	...	...
Jan 171	180:00	...	...	...	...	...
Jan 172	181:00	...	...	...	...	...
Jan 173	182:00	...	...	...	...	...
Jan 174	183:00	...	...	...	...	...
Jan 175	184:00	...	...	...	...	...
Jan 176	185:00	...	...	...	...	...
Jan 177	186:00	...	...	...	...	...
Jan 178	187:00	...	...	...	...	...
Jan 179	188:00	...	...	...	...	...
Jan 180	189:00	...	...	...	...	...
Jan 181	190:00	...	...	...	...	...
Jan 182	191:00	...	...	...	...	...
Jan 183	192:00	...	...	...	...	...
Jan 184	193:00	...	...	...	...	...
Jan 185	194:00	...	...	...	...	...
Jan 186	195:00	...	...	...	...	...
Jan 187	196:00	...	...	...	...	...
Jan 188	197:00	...	...	...	...	...
Jan 189	198:00	...	...	...	...	...
Jan 190	199:00	...	...	...	...	...
Jan 191	200:00	...	...	...	...	...
Jan 192	201:00	...	...	...	...	...
Jan 193	202:00	...	...	...	...	...
Jan 194	203:00	...	...	...	...	...
Jan 195	204:00	...	...	...	...	...
Jan 196	205:00	...	...	...	...	...
Jan 197	206:00	...	...	...	...	...
Jan 198	207:00	...	...	...	...	...
Jan 199	208:00	...	...	...	...	...
Jan 200	209:00	...	...	...	...	...
Jan 201	210:00	...	...	...	...	...
Jan 202	211:00	...	...	...	...	...
Jan 203	212:00	...	...	...	...	...
Jan 204	213:00	...	...	...	...	...
Jan 205	214:00	...	...	...	...	...
Jan 206	215:00	...	...	...	...	...
Jan 207	216:00	...	...	...	...	...
Jan 208	217:00	...	...	...	...	...
Jan 209	218:00	...	...	...	...	...
Jan 210	219:00	...	...	...	...	...
Jan 211	220:00	...	...	...	...	...
Jan 212	221:00	...	...	...	...	...
Jan 213	222:00	...	...	...	...	...
Jan 214	223:00	...	...	...	...	...
Jan 215	224:00	...	...	...	...	...
Jan 216	225:00	...	...	...	...	...
Jan 217	226:00	...	...	...	...	...
Jan 218	227:00	...	...	...	...	...
Jan 219	228:00	...	...	...	...	...
Jan 220	229:00	...	...	...	...	...
Jan 221	230:00	...	...	...	...	...
Jan 222	231:00	...	...	...	...	...
Jan 223	232:00	...	...	...	...	...
Jan 224	233:00	...	...	...	...	...
Jan 225	234:00	...	...	...	...	...
Jan 226	235:00	...	...	...	...	...
Jan 227	236:00	...	...	...	...	...
Jan 228	237:00	...	...	...	...	...
Jan 229	238:00	...	...	...	...	...
Jan 230	239:00	...	...	...	...	...
Jan 231	240:00	...	...	...	...	...
Jan 232	241:00	...	...	...	...	...
Jan 233	242:00	...	...	...	...	...
Jan 234	243:00	...	...	...	...	...
Jan 235	244:00	...	...	...	...	...
Jan 236	245:00	...	...	...	...	...
Jan 237	246:00	...	...	...	...	...
Jan 238	247:00	...	...	...	...	

# Barberry

NOT ALWAYS EASY TO FIND



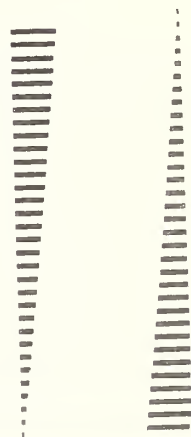
*Small seedling barberry nearly submerged in snow.*



*Large barberry bush hidden among native trees.*



*Removing a medium-sized barberry bush in very heavy underbrush.*





# SUMMARY OF ASSOCIATED ACTIVITIES

Program Barberry

Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INFEST. MAPS & POSTERS	
California								1		3718		
Colorado		1	2				1		710	312	12	4
Montana								2		175		
Oregon		1		1								1
Washington		1			10		7		450		12	2
Wyoming							2		90	46		1
Total		3	2	1	10		10	3	1250	4251	24	8





## Grasshoppers

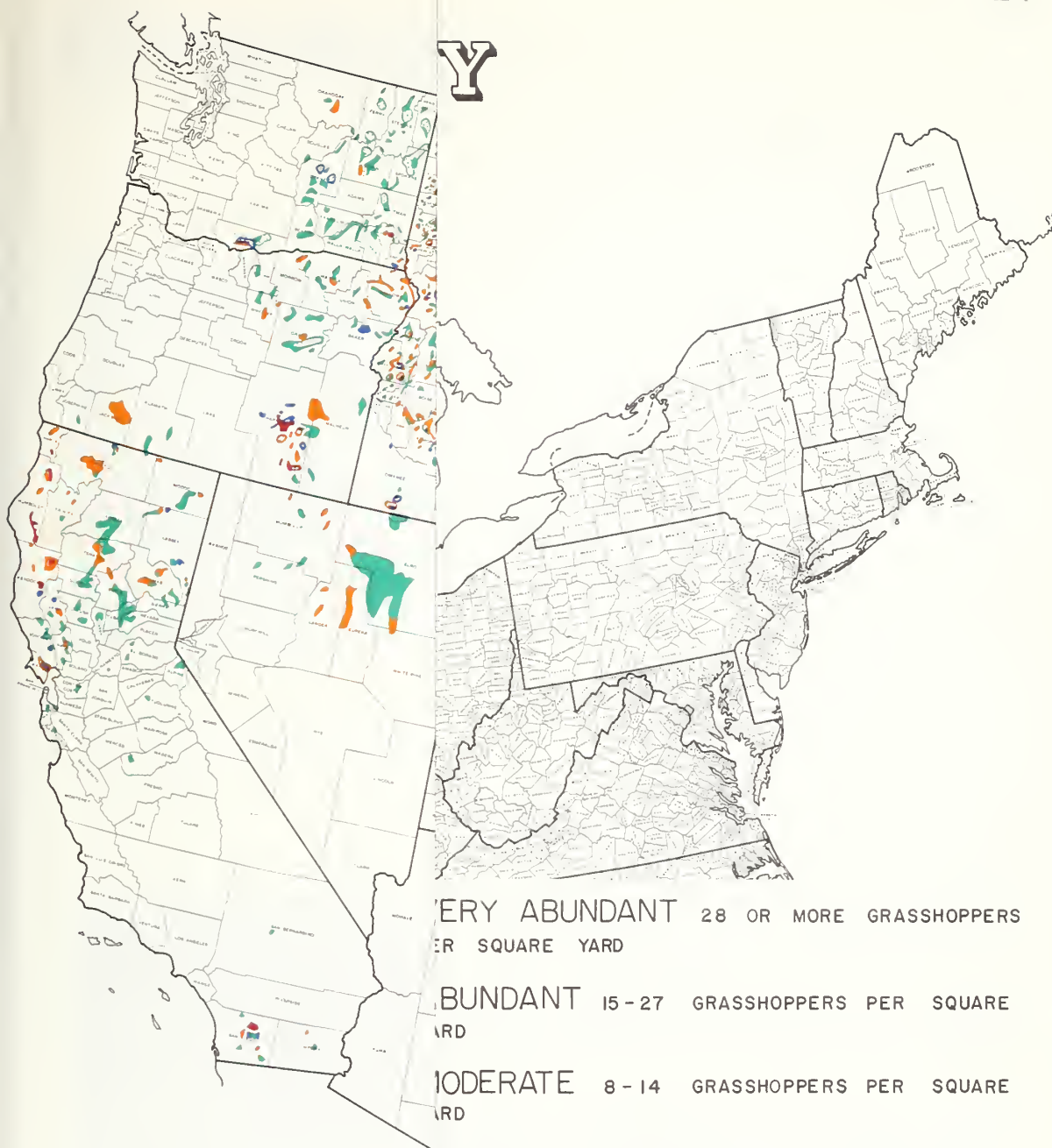
The acreage cooperatively treated for grasshopper control in the 1963 field season was more than three times that treated in 1962. Principal treatment areas were in Idaho where some 300,000 acres were controlled, and in Wyoming where 145,000 acres were sprayed. Lesser acreages were treated in Arizona, California, Nevada, Oregon and Utah. Over 40 thousand acres were treated experimentally in cooperation with Entomology Research Division. More than half of this latter work was done in Idaho, and the acreage is included in the Idaho total. The testing work which bridged the fiscal years 1963 and 1964 was principally concerned with results from applied small volume rates of mixed insecticides. Both chlorinated hydrocarbons and other types of insecticide were used. For all practical purposes equal results were obtained at volumes ranging from 5/8 pint to a gallon of solution or mixture per acre. Technical malathion was found to give excellent control at the rate of 9 to 12 ounces actual material per acre when applied at various volumes.

Preliminary results obtained with technical malathion were so encouraging that, on the basis of knowledge gained early in the season, we made good use of this material in treating about 100 thousand acres where particular attention to residues was an important factor to be considered.

In much of the Region, federally-owned and -managed rangelands made up the larger portion of severely infested lands. Because of this a majority of the control work was done with only small contributions from cooperators, except in Wyoming. In that State the legislature makes funds available to the Wyoming Department of Agriculture. This money is readily available, and there are few if any impeding requirements associated with its use, even on Federal lands.

Drouth in eastern Colorado, New Mexico, and Arizona was severe this season, and in many instances the expected development of populations did not occur. The 1963 adult survey indicates that nothing more than minor problems should be experienced in the southern part of the Plains Area in 1964. However, if the fall, winter, and spring are favorable to grasshoppers, it is possible that a rapid return to outbreak proportions could result. The situation is quite different, though, in Montana and parts of Wyoming where rather high grasshopper populations were present at adult survey time. Very severe infestations are possible in parts of those states, as well as in parts of Idaho and Utah, next field season.





VERY ABUNDANT 28 OR MORE GRASSHOPPERS  
PER SQUARE YARD

ABUNDANT 15-27 GRASSHOPPERS PER SQUARE  
YARD

MODERATE 8-14 GRASSHOPPERS PER SQUARE  
YARD

LIGHT 3-7 GRASSHOPPERS PER SQUARE YARD

SOLID COLORS - RANGELAND INFESTATIONS  
STIPPLED COLORS - CROPLAND INFESTATIONS

(SEE RI

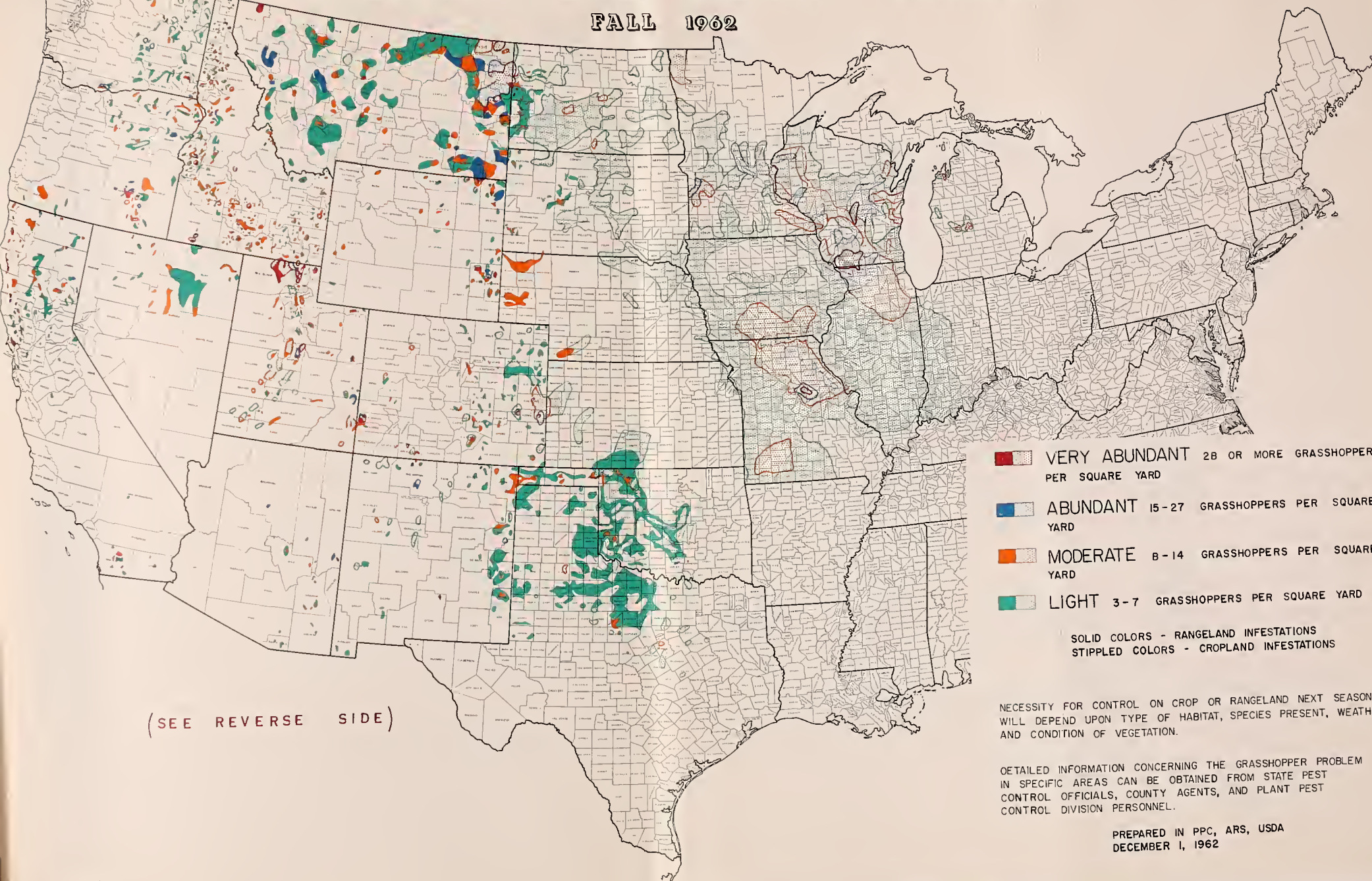
FOR CONTROL ON CROP OR RANGELAND NEXT SEASON  
AND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER,  
TION OF VEGETATION.

INFORMATION CONCERNING THE GRASSHOPPER PROBLEM  
AREAS CAN BE OBTAINED FROM STATE PEST  
OFFICIALS, COUNTY AGENTS, AND PLANT PEST  
DIVISION PERSONNEL.



# GRASSHOPPER ADULT SURVEY

FALL 1962





UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION

TO COOPERATORS

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1962. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1963. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1963.

The infestations in croplands, shown on the map in stippling, in general are lower than those which were indicated in the 1961 fall survey. Control on those lands will be handled by the farmers with technical assistance from Division and State personnel. The infested range areas, shown on the map in solid colors (orange, blue and red only), total 7,826,670 acres in 16 Western and Midwestern States. Shaded areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS - ACREAGE BY REGIONS, FALL 1962

(Moderate Populations or Above - Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP—ACRES		TOTAL ACRES	REGION AND STATE	LANDOWNERSHIP—ACRES		TOTAL ACRES
	PRIVATE AND STATE	PUBLIC DOMAIN			PRIVATE AND STATE	PUBLIC DOMAIN	
<b>CENTRAL</b>							
No. Dakota	143,800	135,130	278,930	Nevada	8,210	73,890	82,100
So. Dakota	31,210	4,500	35,710	New Mexico	151,500	21,500	173,000
Nebraska	500,000	—	500,000	Oregon	280,720	175,180	455,900
<b>WESTERN</b>				Utah	199,600	244,100	443,700
Arizona	10,000	3,100	13,100	Washington	130,700	—	130,700
California	434,070	—	434,070	Wyoming	290,600	8,400	299,000
Colorado	203,440	5,000	208,440	<b>SOUTHERN</b>			
Idaho	116,300	724,600	840,900	Oklahoma	187,000	—	187,000
Montana	3,253,000	424,000	3,677,000	Texas	67,120	—	67,120

The survey was planned and performed by the Plant Pest Control Division, Agricultural Research Service, in cooperation with various State agencies concerned.

## U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

WILDLIFE DIVISION

During the late summer and fall of 1962. The survey reveals where and how many grasshopper infestations occurred. The survey also includes grasshopper population surveys, made in the spring, determine population densities, and indicate those areas which were indicated in the 1961 fall survey. Control on those lands will be determined on the basis of the survey results.

Those areas which were indicated in the 1961 fall survey. Control on those lands will be determined on the basis of the survey results. Those areas which were indicated in the 1961 fall survey. Control on those lands will be determined on the basis of the survey results. Those areas which were indicated in the 1961 fall survey. Control on those lands will be determined on the basis of the survey results.

### ACREAGE BY REGIONS, FALL 1962

(Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP—ACRES		TOTAL ACRES
	PRIVATE AND STATE	PUBLIC DOMAIN	
Nevada	8,210	73,890	82,100
New Mexico	151,500	21,500	173,000
Oregon	280,720	175,180	455,900
Utah	199,600	244,100	443,700
Washington	130,700	—	130,700
Wyoming	290,600	8,400	299,000
<b>SOUTHERN</b>			
Oklahoma	187,000	—	187,000
Texas	67,120	—	67,120

Forest Service, in cooperation with various State agencies concerned.

# Grasshoppers

15

**EQUIPMENT TO FIT THE JOB  
AND THE SITUATION**



*Broadcaster spreader built in 1938 still has a place in our planning.*



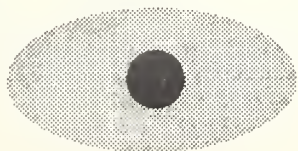
*Buffalo turbine mounted on Dodge power wagon.*



*Temporary spray boom attachment mounted on a community-owned fire engine -- used in 1963 in Arizona.*



*The airplane for the big job.*





# GRASSHOPPER CONTROL - RANGELAND

LOCATION OF AREAS COOPERATIVELY TREATED  
1963 CONTROL SEASON



Treated areas are shown diagrammatically and not to scale because of small number of acres involved in some counties. Actual treated acres are shown on legends.

**TOTAL ACRES TREATED — 478,052**

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION  
WESTERN REGION  
AUGUST 1963





# GRASSHOPPERS

17

*MANY STEPS GO INTO PLANNING  
AND PREPARING FOR THEIR CONTROL*



*Surveys are a continuing activity to determine areas needing control, and to delimit them for application of insecticides.*



*Landing strips are located as near as possible to the control areas thus avoiding long ferry distance.*



*Areas to be controlled are flagged to assure that insecticides are applied within area designated for control.*



*Insecticide supply tanks and supporting equipment are brought to airstrip for convenient and effective use.*



*Airstrip ready, equipment and supplies on hand.*



*Mixing control materials in preparation for pre-dawn takeoff.*



# SURVEY AND DETECTION REPORT

Program Grasshopper

Fiscal Year 1963

STATE	NUMBER OF ACRES INFESTED	
	Adult Survey	Nymphal Survey
Arizona	13,100	42,000
California	434,730	176,840
Colorado	208,440	30,000
Idaho	840,900	1,098,900
Montana	3,677,000	192,000
Nevada	101,100	235,300
New Mexico	173,000	15,500
Oregon	455,900	14,000
Utah	437,500	<del>642,300</del> 667,300
Washington	130,700	72,000
Wyoming	299,000	443,900
Total	6,771,370	<del>2,962,740</del> 2,987,740





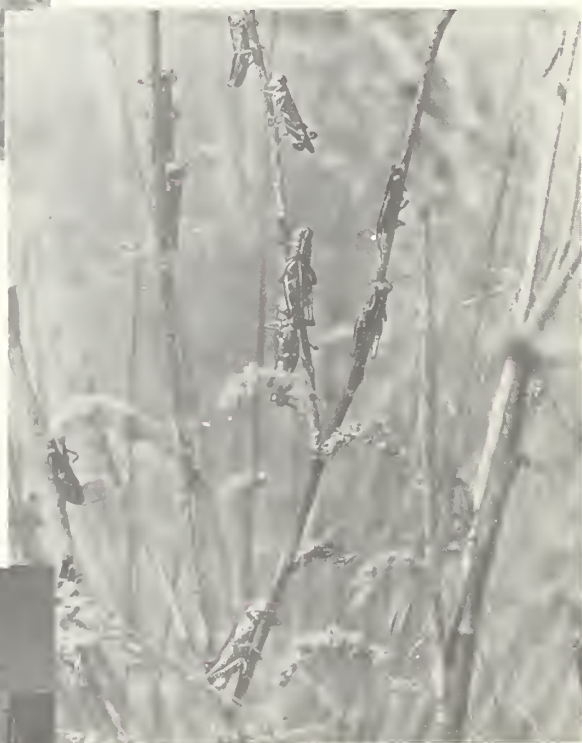
# Grasshoppers

19

## *ECONOMIC NUMBERS*



*Grasshopper nymphs*



*Adults on alfalfa*



*Adult grasshoppers ready  
to move to better food.*



WORK REPORT  
1962 ADULT GRASSHOPPER SURVEY

Program Grasshopper

Fiscal Year 1963

State	No. of Counties Surveyed	Total No. of Stops	Miles Traveled		No. of Men		Man Days		Time Period		Cost	
			PPC	State & Co.	PPC	State & Co.	PPC	State & Co.	Start	Stop	PPC	State & Co.
Arizona	8	209	6,329	0	7	0	57	0	6/12/63	10/4/62	\$ 677	\$ 0
California	57	541	15,351	2,816	11	33	96	53	7/9/62	8/23/62	664	379
Colorado	48	448	13,400	2,948	7	4	98	24	7/23/62	8/17/62	1,185	206
Idaho	44	--	19,946	--	11	--	133	--	8/1/62	9/20/62	1,887	--
Montana	56	626	17,164	0	7	0	73	0	7/2/62	8/31/62	761	0
Nevada	16	161	8,000	--	3	1	26	15	7/31/62	8/25/62	997	800
New Mexico	11	130	8,976	12,445	7	1	48	33	7/11/62	8/23/62	447	416
Oregon	21	127	9,441	1,100	2	<del>62</del> 1	<del>62</del> 1	16	7/10/62	8/16/62	690	176
Utah	29	307	19,231	4,600	6	1	109	15	7/16/62	8/22/62	1,157	768
Washington	20	136	6,586	--	3	--	54	--	7/11/62	8/10/62	541	--
Wyoming	23	252	6,519	2,240	4	2	50	10	7/23/62	8/23/62	499	100
Total	333	2,937	130,943	26,149	68	104	745	166			\$9,505	\$2,845

43



# Grasshoppers

21

## *DAMAGED CROPS, RANGE GRASSES AND TREES*



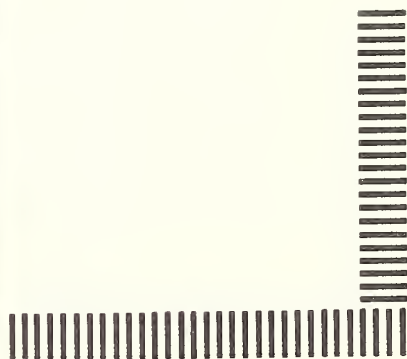
*Alfalfa*



*Pine tree*



*Choke cherry*







# SUMMARY OF ASSOCIATED ACTIVITIES

Program Grasshopper

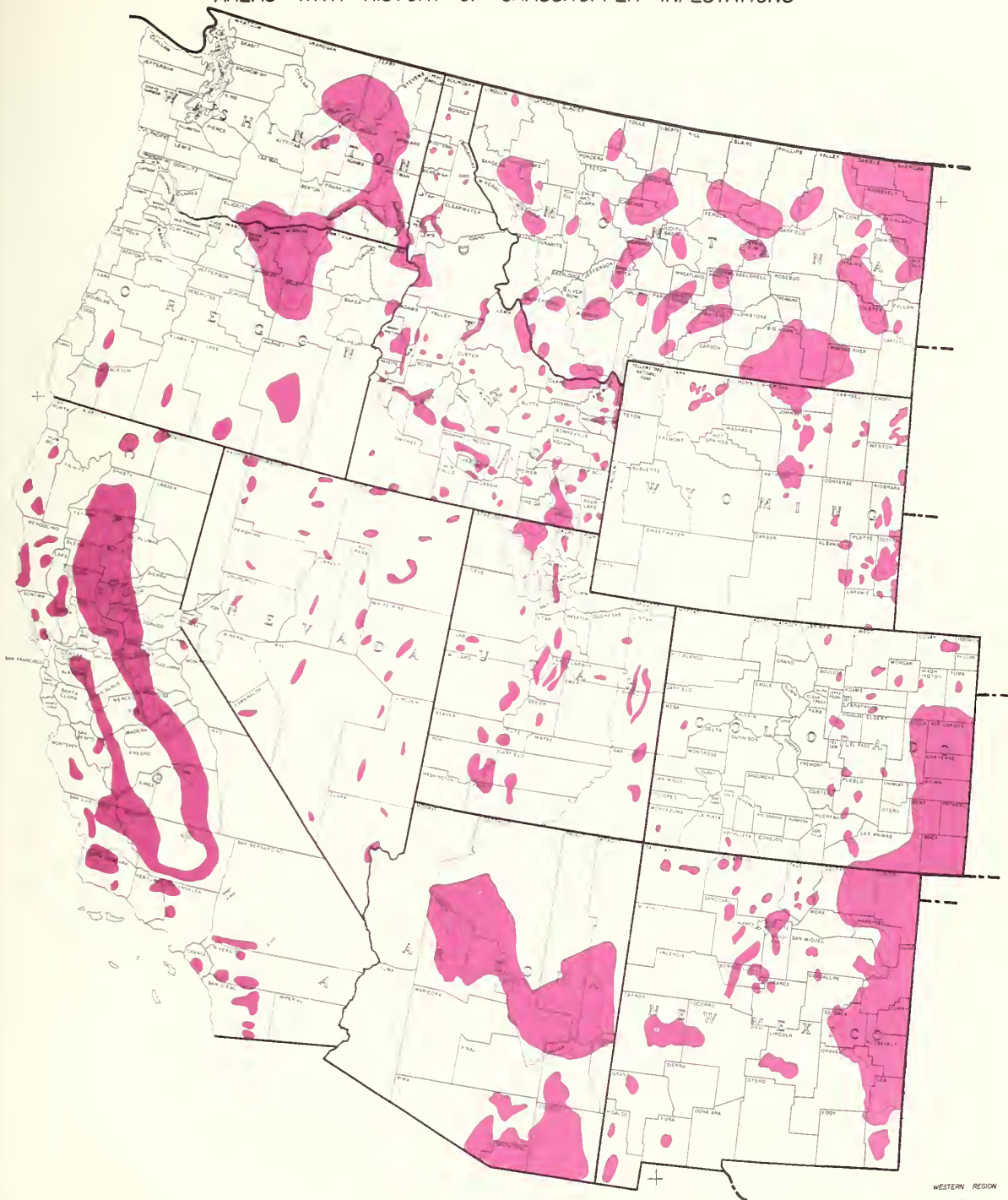
Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INFEST. MAPS & POSTERS	
Arizona			1				4	1	100	352	24	1
California	3	5	1	5	1	1	1	1	150	3532	250	31
Colorado	2	3	2				1		50	430	99	
Idaho	11	8	3			1	1	2	1250	750	70	
Montana						1	3				184	3
Nevada	4	4	3		4			1		5000	100	
New Mexico									1250		45	1
Oregon	3	3		2	2					460	100	5
Utah	14	12	24						1000	137	25	1
Washington		5							14		28	
Wyoming	5											
Total	42	40	34	7	7	3	9	5	3814	10,661	925	42



# GRASSHOPPERS

AREAS WITH HISTORY OF GRASSHOPPER INFESTATIONS



WESTERN REGION



PLANT PEST CONTROL DIVISION  
U.S.D.A.





## Japanese Beetle

No live Japanese beetles have been found in the California infested area since June 18, 1962, although the detection program has been vigorously pursued. There has been an increase both in the number of traps exposed and in the amount of visual inspection made.

Resulting from the fact that no beetles had been seen or trapped, the foliage treatment area was reduced from approximately 800 city blocks to 100 city blocks for the 1963 applications. Soil samples have been taken regularly, and analyses have shown that insecticide concentration in the soil is well above the minimum necessary to kill early instar larvae.

There have been several instances of reported Japanese beetle finds by other than state or federal inspectors. Each report has been thoroughly investigated, and it is the opinion of our cooperators, shared by us, that none of these unnaturally occurring specimens represents a new California infestation.

Not having found any beetles this year, we are encouraged to believe that eradication of this pest in the Sacramento area is progressing well. Eradication procedures will be continued until we have reasonable assurance that the goal has been attained.

Effective July 10, 1962, Philadelphia International Airport was again declared to be hazardous on account of Japanese beetles, and many flights originating or touching down there before proceeding to the West Coast were inspected at destinations or points enroute, by state or other inspectors. Only a very few beetles were found. Several of these were collected by airline cleanup crews or baggage handlers and turned in to designated personnel. The few specimens found this year suggest that the airport soil treatment program, as well as the dusting of planes before leaving hazardous airports, is proving effective.

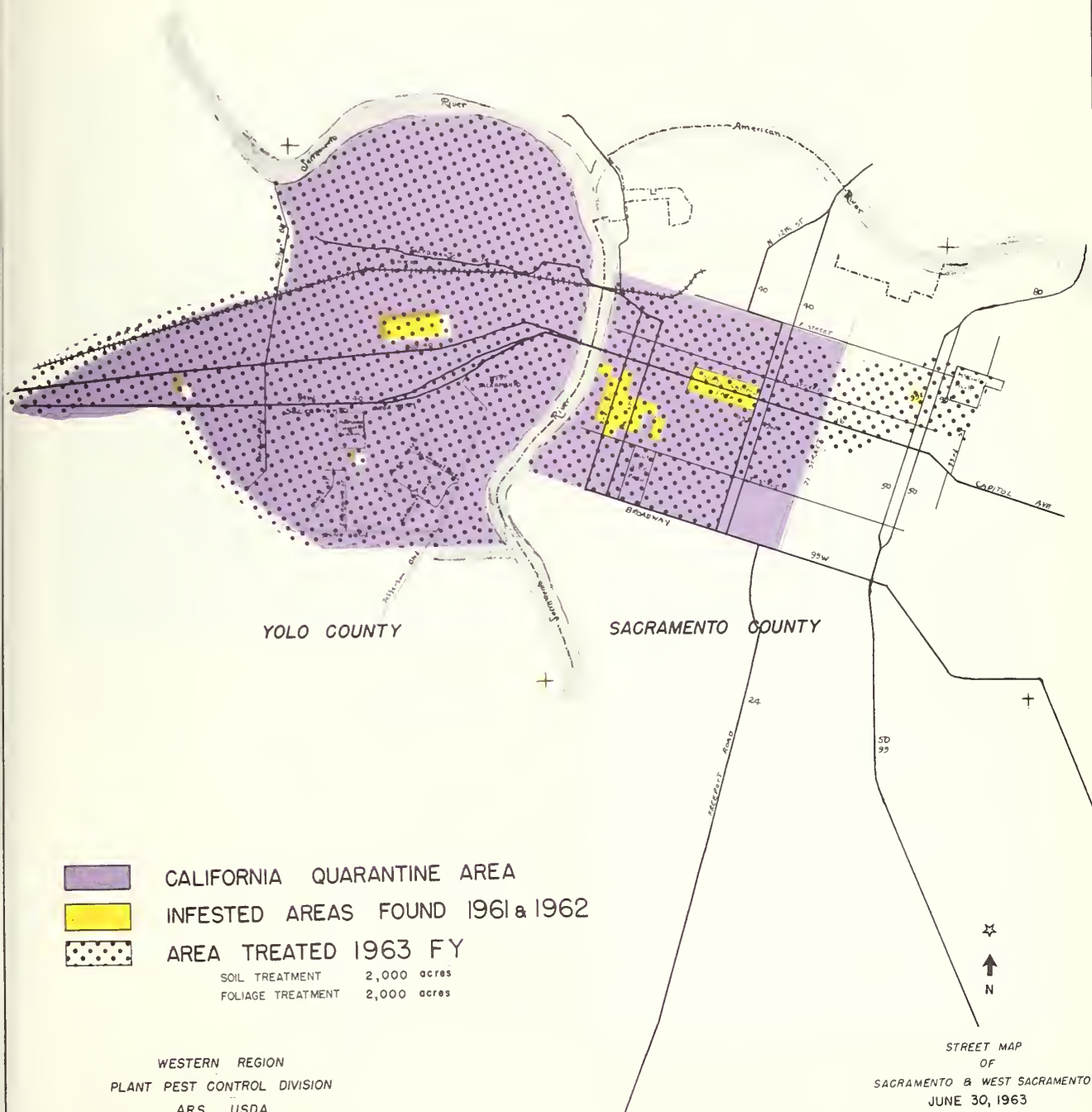
More than 8,000 Japanese beetle traps were exposed in the Western Region during the season. Most of these were in California, although nearly all important rail, air, and bus terminals were trapped in each of the remaining states. Many agencies, including State Departments of Agriculture, counties, the Air Force, and other Federal facilities assisted in maintaining the traps.



# JAPANESE BEETLE ERADICATION

## CALIFORNIA

FISCAL YEAR 1963





# Japanese Beetle

## ERADICATION IN ITS FINAL PHASE

FINAL APPLICATIONS OF FOLIAR SPRAYS WERE APPLIED IN THE  
SACRAMENTO, CALIFORNIA, ERADICATION AREA.



*Roto-Mist sprayer operating in  
Capitol gardens.*



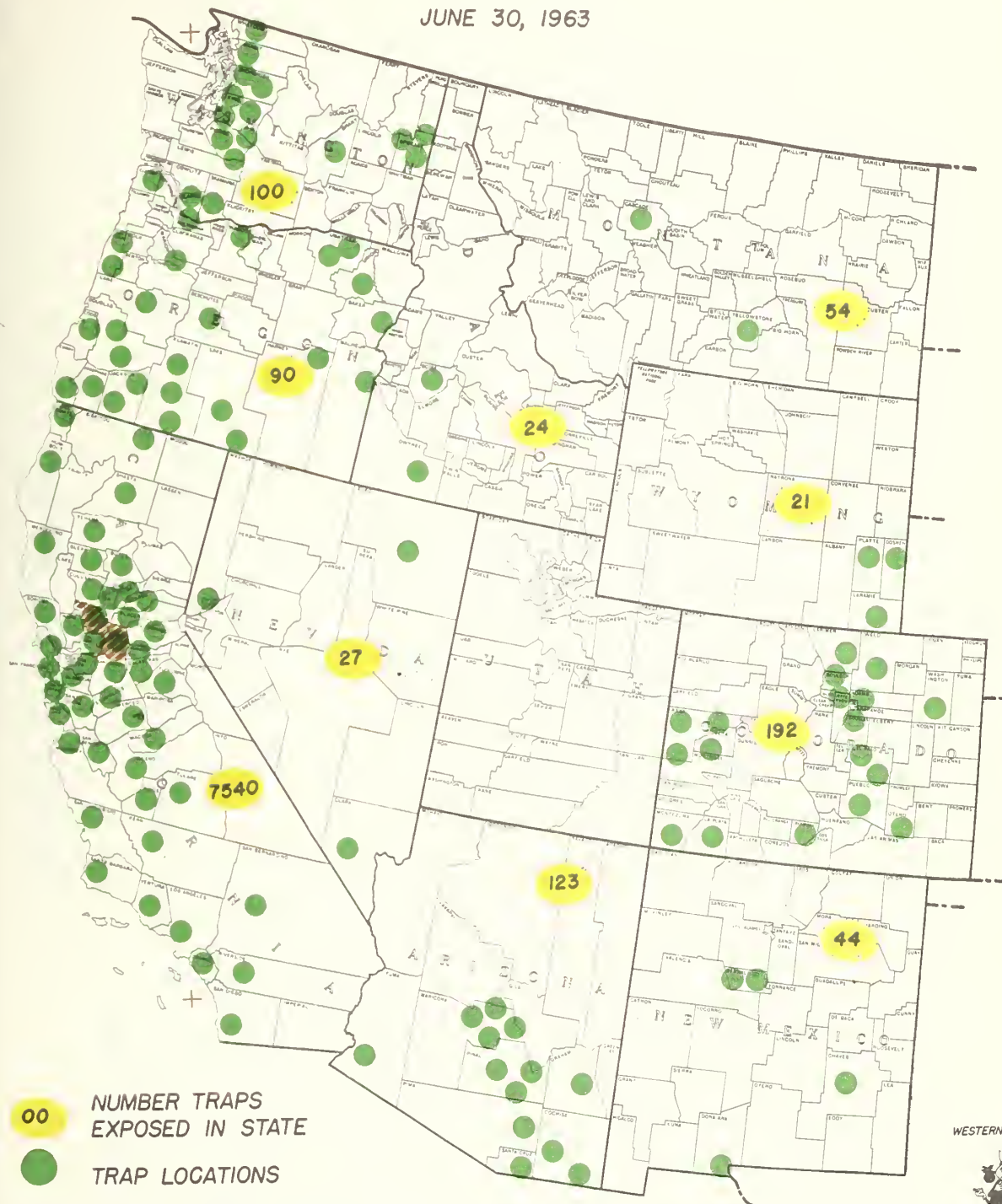
*Orchard gun being used on dooryard  
planting in center of Sacramento  
City.*





# JAPANESE BEETLE DETECTION PROGRAM

JUNE 30, 1963



WESTERN REGION



PLANT PEST CONTROL DIVISION  
ARS USDA  
JUNE 30, 1963



# SUMMARY OF ASSOCIATED ACTIVITIES

Program Japanese Beetle

Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INFEST. MAPS & POSTERS	
California	3	15	60	3	1	1		1	5754	12,078	1500	
New Mexico								1			1000	
Oregon									50		105	
Washington									25		315	1
Total	3	15	60	3	1	1		2	5829	12,078	2920	1





## Khapra Beetle

For the fiscal year 1963 some 17 khapra beetle infested properties with a volume of 1,800,452 cubic feet were found in Arizona. The last one was found July 11, 1962. There were no infestations in California or New Mexico--the only other states in which the pest has been found in the Western Region.

Eighteen infested premises with a volume of 2,750,617 cubic feet were fumigated; these were all in Arizona.

Commodity fumigations were made in California, Colorado, Idaho, Utah, and Washington as a result of cargo from infested ships entering trade channels in these states. Shipboard infestations are frequently associated with cargo at or near the bottom of the hold. Hence, cargo is sometimes off-loaded and moved before an infestation is found. When this occurs, it becomes necessary to trace shipments, place hold orders, and have the commodity and land carrier, car or truck, fumigated.

Grain storage facilities throughout Turkey are now reported to be generally infested with khapra beetles, as are many similar premises throughout Middle Eastern Countries. The pressure of introductions from abroad continues to mount as progress is made in cleaning up infestations in this country.

A high level of inspection was maintained during the fiscal year, even though there were some 15 thousand fewer inspections made than during the 1962 fiscal year. Less exposed properties, having been examined at least once and found negative, were dropped from the regular inspection schedule.

Properties have been reevaluated as to their potential infestation hazard, and inspection schedules adjusted accordingly. In California suspect properties are now being inspected by special survey teams composed of top PPC, state, and county inspectors.

It is believed that progress continues to be made toward the ultimate goal, eradication. However, it should not be overlooked that the khapra beetle may lie dormant and below detection levels several years and then explode to extremely high populations.

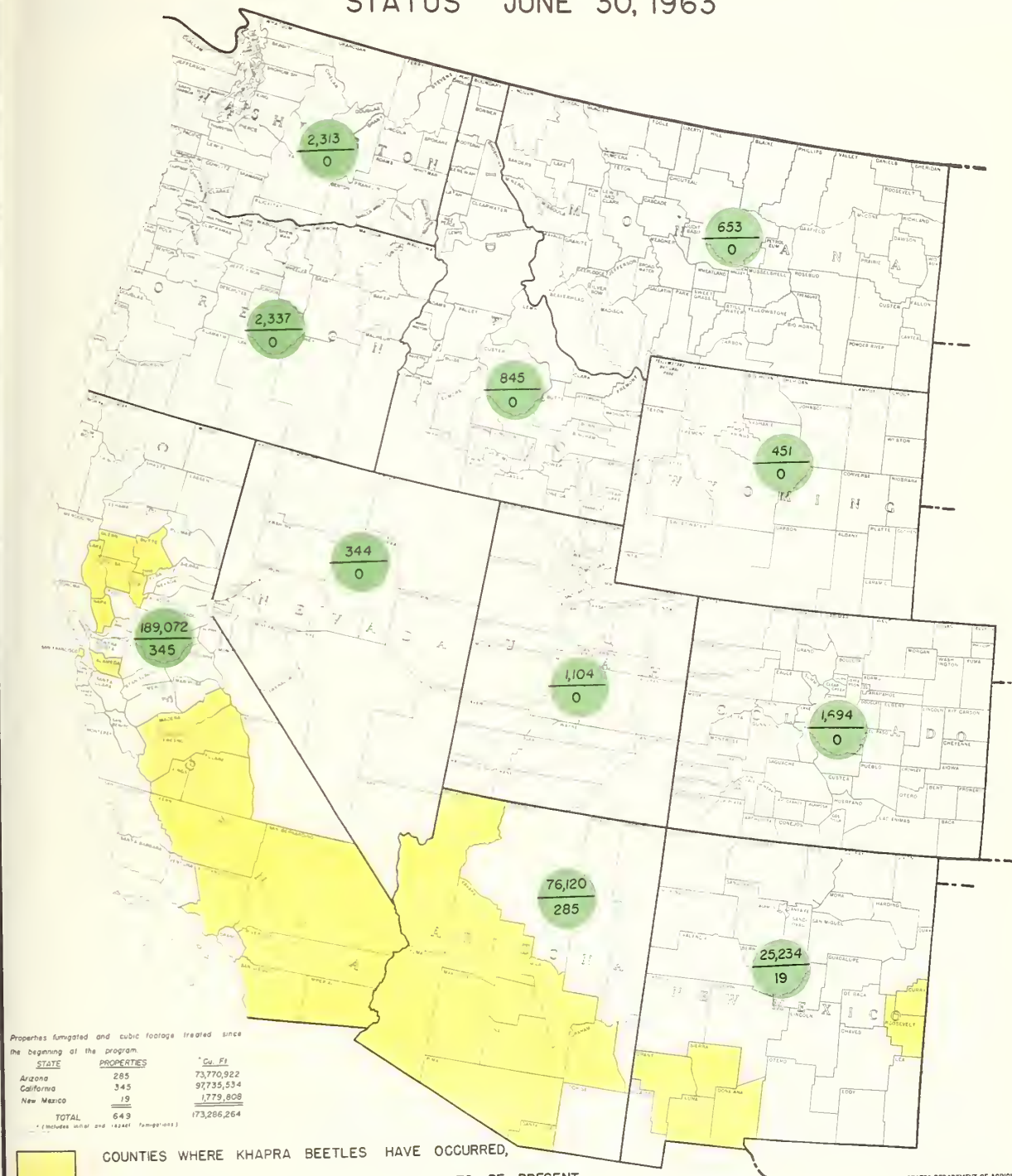
To protect accomplishments made to date, it will be necessary to continue to be on the alert for khapra beetles for many years to come.

Without the fine border protection of the Plant Quarantine Division, it is most probable that khapra beetles would be entering this country faster than they could be found and treated. That agency's record of interceptions clearly points up the possibility.



# KHAPRA BEETLE ERADICATION

## STATUS JUNE 30, 1963



UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE  
 PLANT PEST CONTROL DIVISION  
 WESTERN REGION  
 JUNE 30, 1963



# Khapra Beetle

31

*THEY ARE DETERMINED TO BECOME CITIZENS*



*As the occurrence of khapra beetle diminishes, the problem of discovering that last infestation takes the inspector to the "least likely" places.*



*The S. S. BENGALAN, delivering cargo to western U. S. ports from the Middle East, was found to be infested with khapra beetles. Trans-shipments of the cargo were already on their way deep into interior states before discovery. Box car with exposed material was detained and fumigated at Salt Lake City.*





# SURVEY AND CONTROL ACCOMPLISHMENT

Program Khapra Beetle

Fiscal Year 1963

State	Properties		Properties Fumigated	Volume Fumigated (cu. ft.)
	Inspected	Infested		
Arizona	6,843	17	18	2,750,617
California	15,451			
Colorado	73			
Idaho	118			
Nevada	11			
New Mexico	4,932			
Oregon	60			
Utah	52			
Washington	235			
Wyoming	53			
Totals	27,828	17	18	2,750,617

Since the beginning of program, there were 299,222 properties inspected. Infestation totals are: Arizona, 285; California, 345; and New Mexico, 19. Infested volume found and treated since the beginning: Arizona, 73,770,922\* cubic feet; California, 97,735,534\*\*cubic feet; and New Mexico, 1,779,808 cubic feet.

\*Cubic footage includes 9 reinfestations in Arizona with a total of 7,733,128 cubic feet.

\*\*Cubic footage includes 27 reinfestations in California with a total of 14,081,683 cubic feet.



# Safety

*IS AS IMPORTANT AS THE JOB ITSELF*



*Employees are fully advised of safety practices necessary on each assignment.*



*Numerous danger signs are posted at khapra beetle fumigation sites.*



*Safety kits are available at each fumigation job.*







# SUMMARY OF ASSOCIATED ACTIVITIES

Program Khapra Beetle

Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INFEST. MAPS & POSTERS	
Arizona	7	5	4	5			11	2		4378		1494
California		2	2					1		1983		
Colorado		1	1						237	23		
Idaho	2	1	1									
Nevada		1						1	50	500		1
New Mexico												
Oregon	2	1								50		1
Utah	1		1				1		125			
Washington									165	30		
Wyoming												
Total	12	11	9	5			12	4	577	6964		1496



## Mexican Fruit Fly

Detection and preventive control measures are carried on along the Mexican border in southern California in cooperation with the California State Department of Agriculture.

In Arizona a trapping survey program is conducted in the Yuma area from November through April and in the Nogales area from May through October.

The most vulnerable area in California lies along the border from the Pacific Ocean eastward to the mountains. In this sector, there are to be found extensive host plantings on both sides of the border and a favorable climate. There is also a tremendous cross-border traffic as a potential carrier of the fruit fly.

Continuing eastward along the Mexican border is the Imperial Valley where it is believed extremely high summer temperatures would destroy all possible fruit fly carryover.

As a detection measure a complement of 2,884 traps is operated on a year round schedule from the coast to the mountains, the most vulnerable area, and 455 traps in the mountains. Visual inspection of several kinds of host fruit is made in conjunction with the trapping.

To further protect California citrus and other host fruits from this pest, a seasonal spray program is carried on cooperatively with the Plant Pest Control Division furnishing the insecticide and the California State Department of Agriculture applying the spray material. Spray applications were made by both air and ground equipment depending on the area to be treated and the timing. Treatment included both host and nonhost plants plus 846 acres of brush land in canyons along the west slope of the mountains.

No positive specimens have been recovered in California since 1957. It would appear that this is an effective program.



# Mexican Fruit Fly

PREVENTING A PROBLEM BEFORE IT OCCURS



A specially equipped vehicle has been developed by California Department of Agriculture to facilitate servicing McPhail traps exposed along the Border area.



As a preventive measure, sprays are applied to all green vegetative growth in a barrier area established along the International Border in San Diego County.



Fumigation chamber on the Mexico side of the Border. Host fruit is fumigated under supervision of cooperative State-Federal personnel.



Inspector examining host fruit in market in Mexico border town.



Soil taken from under host tree is sifted in search of Mexican fruit fly pupae.







# SUMMARY OF ASSOCIATED ACTIVITIES

Program Mexican Fruit Fly

Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INVEST. MAPS & POSTERS	
California		2	2	2	1	1	5	1		3908		
Total		2	2	2	1	1	5	1		3908		



## Mormon Crickets

Cooperative Mormon cricket control was necessary this season only in Utah, where 1,500 acres were baited west of Kanosh. Both federal and private lands were involved, and the Division shared the cost of the bait with ranchers who applied it, using Division ground baiting equipment mounted on rancher vehicles. Another 850 acres east of Tooele were controlled by local interests, with the county as principal provider of finances.

A heavy population of Mormon crickets in the Bear Mountain area of Daggett County, Utah, was reduced to noneconomic proportions by natural means. The principal predator was a small wasp, Tachysphex sp. The population declined from 15 per square yard on May 15, to one per 100 square yards on May 24. Although we had made preparations to bait the original infestation of 15,000 acres, it was not necessary to spread any bait in the area.

Other light infestations of these insects are known to exist in many of the remaining Western States, and these areas will be carefully checked to assure that buildups will be detected in time to institute effective control before large areas become infested. This policy has been followed successfully for several years.





# MORMON CRICKET CONTROL - RANGELAND

LOCATION OF AREAS COOPERATIVELY TREATED  
1963 CONTROL SEASON



*Treated areas are shown diagrammatically and not to scale because of small number of acres involved in same counties. Actual treated acres are shown on legends.*

**TOTAL ACRES TREATED — 1,500**

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION  
WESTERN REGION  
AUGUST 1963



# SURVEY AND DETECTION REPORT

Program Mormon Cricket

Fiscal Year 1963

State	NUMBER OF ACRES INFESTED	
	Adult Survey	Nymphal Survey
Idaho	9,440	13,940
Nevada	30,600	7,700
Utah	20,500	0
Wyoming	--	1,400
Totals	60,540	23,040



# MORMON CRICKET ADULT SURVEY FALL 1963



HEAVY



SCATTERED



PLANT PEST  
PLANT PEST CONTROL DIVISION  
ARS USDA

AUGUST 1963





# SUMMARY OF ASSOCIATED ACTIVITIES

Program Mormon Cricket

Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INFEST. MAPS & POSTERS	
Colorado									31	2	12	
Nevada	3	3	1				5				45	2
Oregon	2	2							10		10	
Utah	1	8	10		1		2				70	3
Washington											10	
Wyoming										5	19	
									16			
Total	6	13	11		1		7		62	2	166	5



## Peach Mosaic Eradication

Peach mosaic disease in the Western PPC Region occurs in the states of Arizona, California, Colorado, New Mexico, and Utah. Cooperative measures to suppress the infection are conducted annually in the states of California, Colorado, and Utah. Infected areas in California have been confined to the southern counties of Los Angeles, Riverside, San Bernardino, and San Diego. The disease has not been found in California's vast commercial peach areas north of the Tehachapi Mountains. In Colorado, peach mosaic occurs in the commercial peach areas of Mesa and Delta Counties, and it is also present in Montrose and Montezuma Counties. Infected counties in Utah are Grand and Washington. Arizona and New Mexico produce some peaches, but on a much smaller scale than in the other states mentioned. Peach mosaic disease is found in these states generally wherever peaches are grown. During the fiscal year 1963, peach mosaic disease continued at a low level. This has been a consistent pattern for the past four years in the control areas.

Some five years ago annual orchard inspections were started as soon as leaves began to appear. Recently the examinations were deferred until the trees completely foliated. This has proved to be the optimum time for mosaic detection.

Colorado's Western Slope experienced one of the most damaging winters of record insofar as peach trees are concerned. Many trees have been taken out as a result of last winter's injury, and no doubt many more will be removed. Not only were trees killed, but peach production was sharply reduced in 1963 because of the severe winter weather. This has placed a financial burden on some growers, resulting in minimum orchard care. Under such conditions peach mosaic symptoms become masked, and identification of infected trees becomes more difficult and may even be missed. Hence, in future years there could be an uptrend in disease incidence.

Response to the cooperative control effort has been demonstrated in Utah, where there was a recurrence of the disease in Washington County in 1961 and where 105 infected trees were found in 1962. This contrasts against only 35 infected trees found in 1963.

All nurseries and dealers growing or handling regulated products in the control area met state requirements for certification. Budwood sources were inspected in Colorado only.

Entomology Research in cooperation with PPC continued a peach mosaic vector control study in an isolated area at Lytle Creek, San Bernardino County, California. In 1960, 1,827 peach trees were inspected at Lytle Creek;

68 mosaic trees were found and removed, representing a 3.0 percent infection. Since 1960 these plantings have received one application of Diazinon at petal fall annually, and none of the peach mosaic infected trees has been removed by Entomology Research Division or the cooperative control agencies. However, some of the mosaic infected trees were removed by the property owners. A summary of the inspections of the vector control study since 1960 follows:

<u>Year</u>	<u>No. Trees Inspected</u>	<u>No. Trees Found Infected</u>	<u>Percent Infected</u>
1961	1,306	77	5.8
1962	1,118	118	10.5
1963	1,050	46	4.7

From the above it would appear that in 1963 results of the vector control were beginning to be evident. While the results are indicative, it is too early to draw firm conclusions at this time. Reduction in total trees inspected annually is due to host removal by growers for various reasons.

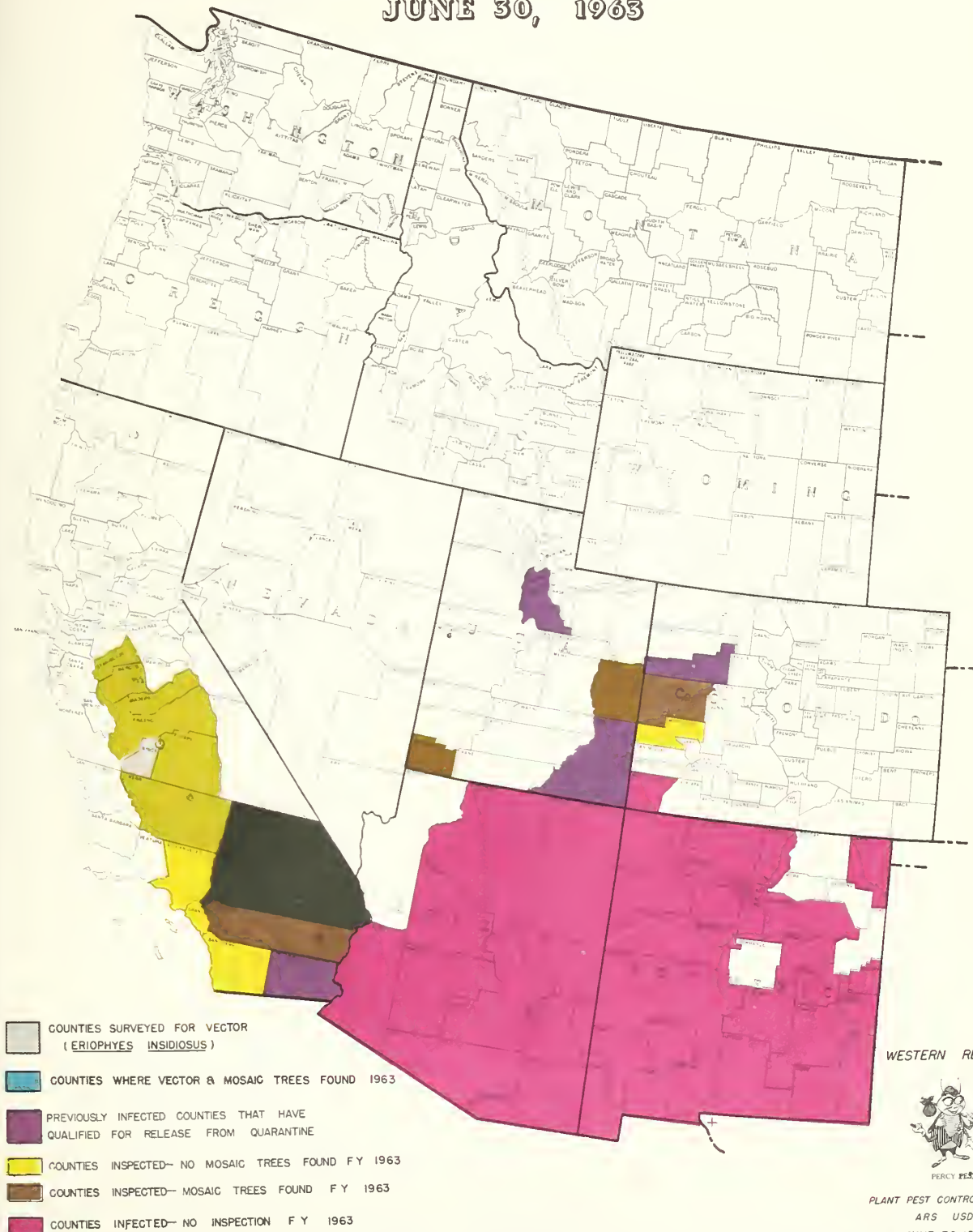
Subsequent to the 1962 application of Diazinon spray, selective inspections were made of the trees in the test area, and the vector was not found until February 1963. It may be that vector control, combined with inspection and removal of infected trees, could further reduce the incidence of peach mosaic disease.

As shown on the program map, and set out below, are counties in the Western Region which formerly were known to contain peach mosaic infected trees, but which currently are believed to be free of the disease. Imperial and Orange Counties in California; Garfield County in Colorado; and Salt Lake, San Juan, and Utah Counties in Utah have been released from state regulations for a number of years.

Again in 1963 a cooperative state, county, and PPC peach mosaic vector survey was made in the San Joaquin Valley of California, with negative results.

# PEACH MOSAIC DISEASE CONTROL

JUNE 30, 1963







# NURSERY INSPECTION - REGULATED AREAS

Program Peach Mosaic

Fiscal Year 1963

State	No. Counties Inspected With Nurseries	Number Nurseries Inspected	Number Nursery Trees Inspected	Environs Inspected				
				Properties		Trees		
				Inspected	Infected	Inspected	Infected	Removed
California	4	186	22,136	174	4	626	4	4
Colorado	1	1	2,695	3		399		
Totals	5	187	24,831	177	4	1,025	4	4



# SUMMARY OF INSPECTIONS

Program Peach Mosaic

Fiscal Year 1963

State	Properties		Trees	
	Inspected	Infected	Inspected	Removed
California	4,018	56	495,878	200
Colorado	1,528	101	933,956	163
Utah	1,299	5	63,227	35
Totals	6,845	162	1,493,061	398



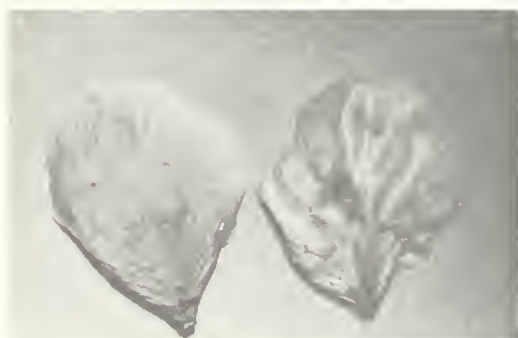
# Peach Mosaic

IS NOT EASY TO DETECT-

BUT THERE IS A BIG DIFFERENCE IN PRODUCTION



Infected and noninfected ; each twigs.



Closeup of bloom petals. Infected petal on right -- healthy petal on left. Note "islands" in infected petal.



Closeup of mosaic infected twig showing twisting and mottling of leaves. Typical in new growth.



Mosaic infected tree -- left side entirely diseased.



Delimbing infected tree -- limbs will be burned and stump treated with herbicide.





# SUMMARY OF ASSOCIATED ACTIVITIES

Fiscal Year 1963

Program Peach Mosaic

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					FEATURE & NEWS STORIES	EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV		EXHIBITS	BUL.	CIR.	INVEST. MAPS & POSTERS	
California		2	2					1		2,005		
Colorado	2	3	1						247	320		
Utah	4	6	7				2			150		3
Total	6	11	10				2	1	247	2,475		3



## Pink Bollworm

The four western cotton-producing states once again planted about  $1\frac{1}{2}$  million acres of cotton--California, 900,000; Arizona, 400,000; New Mexico, 200,000; and Nevada, 3,000.

The area designated as infested remains as it was. No pink bollworms have been found in the eradication area of Arizona wherein cooperative suppressive procedures were applied during the 1963 growing season. Surveys in that same area produced three moths and one worm during the 1962 growing season. New Mexico lint cleaner and field inspections indicate that pink bollworm has declined in the Rio Grande Valley but has increased quite alarmingly in the Pecos River Valley. The latter infestation is limited to a few fields, but rather heavy damage is occurring.

California survey involving bloom, boll, lint cleaner, and gin trash inspection and black light trapping again yielded no pink bollworms. All of these types of inspection were carried out at the same rate and in a manner similar to that of the past three years. Nevada's search for pink bollworms was likewise fruitless. The survey involved bloom, boll, and gin trash inspection, and the operation of seven light traps.

We and our cooperators are encouraged by the progress made toward eradication in central Arizona. Only one larva was found last year, and we have found no sign of the pest in any form this season. Survey activities during the summer and fall of 1962 were continued at previous rates, except that light trapping was reduced by 50 percent. The finding of the one larva resulted in the involvement of two infested fields and six adjacent fields, totaling 223 acres, in this season's treatment program. Starting on May 22 and ending on July 15, 1963, nine applications of Sevin spray were applied by helicopter at 6-day intervals on a cumulative total of 1,899 acres. The helicopter was well adapted to this work and all concerned were pleased with results.

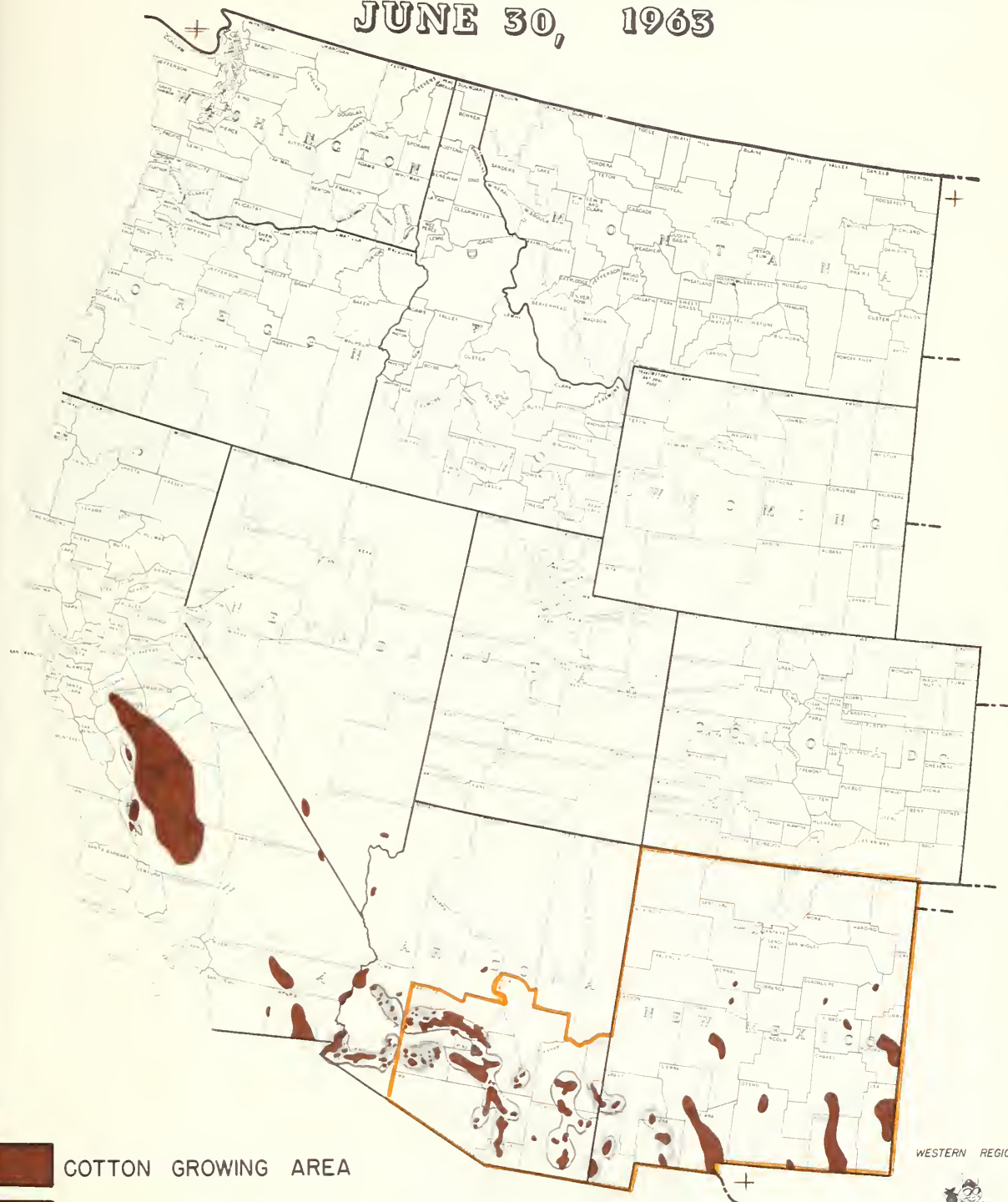
At the request of growers, the Arizona Commission of Agriculture and Horticulture held hearings in late fall 1962 and relaxed state regulations drastically. The most significant relaxation was probably the change in the restrictions against growing stub cotton. Under the new State regulations, stub cotton may be grown except within a 5-mile radius of a field which had been found infested within the prior 12 months. The planting of stub cotton is specially permitted by Arizona upon farmer's application. Mandatory plow-up regulations were modified to permit farmers to choose between deep plowing or disking and planting of a shade crop after shredding cotton crop remnants by February 28. The planting date was abolished. Farmers were allowed to move untreated seed under State permit from gins to farms for livestock feeding, provided it was



ground, crushed, rolled or hammer milled, and fed under approved conditions. Gins were allowed 10 days to close after February 28, but were not to receive final inspection for premises cleanup until May 15. Other modifications dealt with vehicle transport of seed cotton to gins, cotton seed treatment methods alternative to seed sterilization, and gin trash disposal.

Following evocation of these modifications and the rather general feeling of industry that eradication had been achieved, sharp reductions were made in this season's survey activities. Detailed survey is restricted to stub cotton and to fields within one mile of infestations found within three years. This totals some 50,000 acres. On this area we are operating light traps and sex lure traps and are making field examinations. Cotton from these same areas will be inspected in the gin trash and lint cleaner inspection program. The remaining 350,000 acres of western and central Arizona cotton are being looked at on a detection basis, and eastern Arizona cotton is under surveillance. Seven gin trash machines will be operated on a part-time basis within the reduced area, in contrast to 18 such units formerly operated throughout central Arizona on a full-time basis.

# PINK BOLLWORM CONTROL

JUNE 30, 1963



 COTTON GROWING AREA  
 REGULATED AREA

WESTERN REGION



PLANT PEST CONTROL DIVISION  
ARS USDA

JUNE 30, 1963





# Pink Bollworm

*ERADICATION COMES CLOSER TO  
ACCOMPLISHMENT*



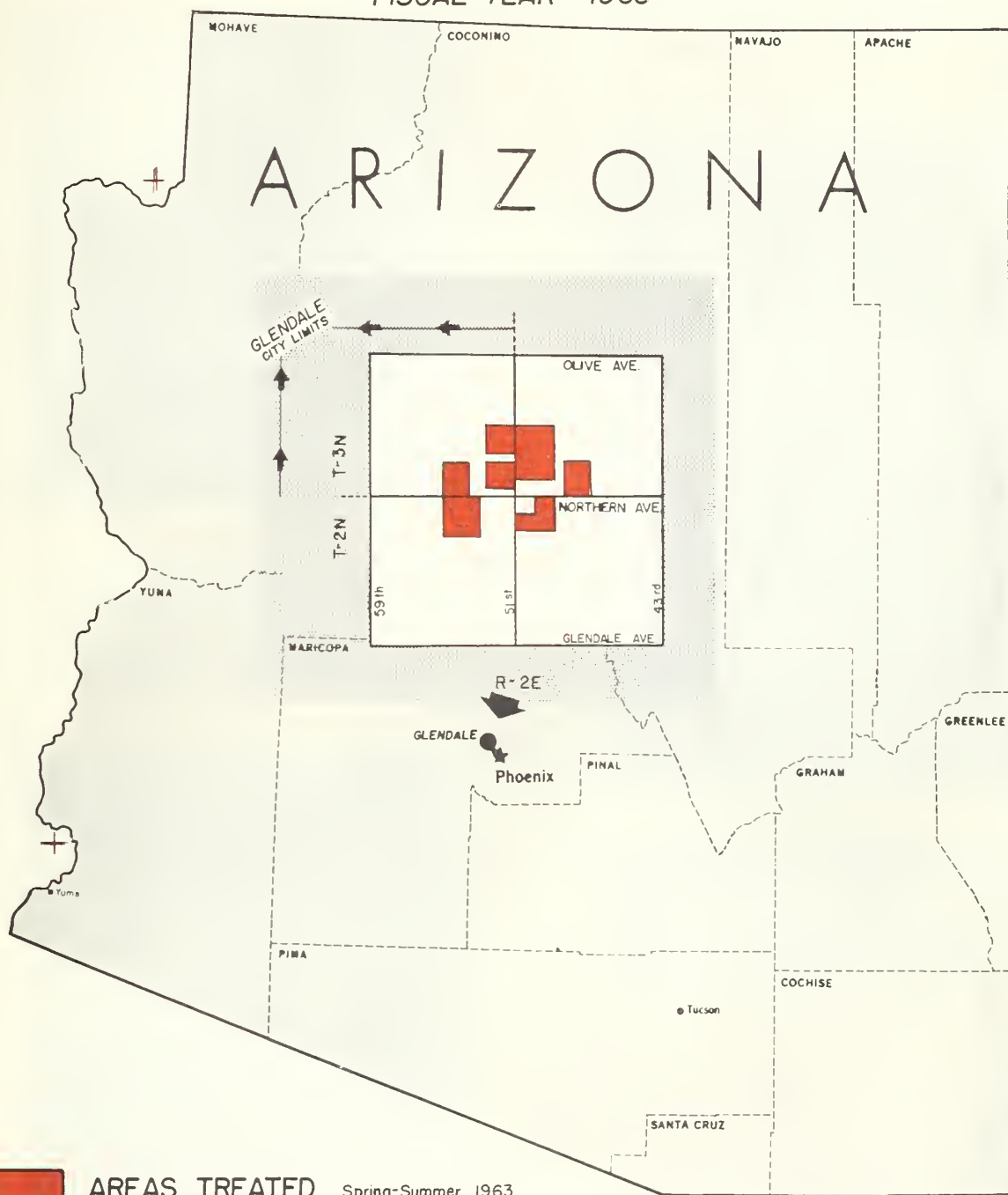
*Helicopters were used for the first time by PPC in Arizona for applying insecticides to cotton where precision application was essential in preventing residue in nearby forage crops. Results were excellent.*





# PINK BOLLWORM ERADICATION

FISCAL YEAR - 1963



AREAS TREATED Spring-Summer 1963

(Estimated acres treated - 223)

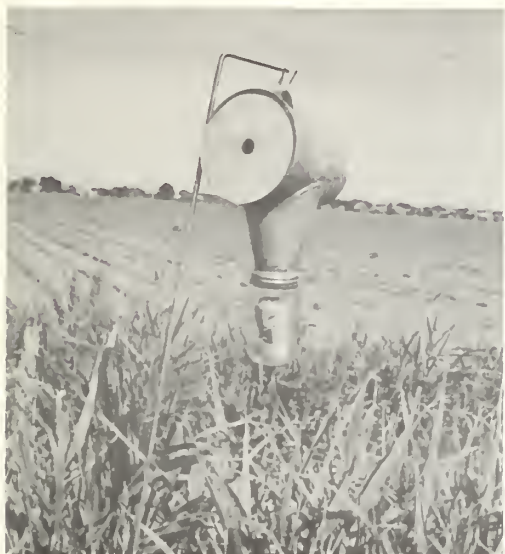
UNITED STATES DEPARTMENT OF AGRICULTURE  
NATIONAL PLANT PEST CONTROL SERVICE  
WESTERN REGION  
JUNE 30, 1963



# Pink Bollworm

55

## MALE MOTHS BEWARE



*A new PBW sex lure and two differently designed traps were developed by ENT, Brownsville, Texas, and provided to PPC for limited use in Arizona this season.*



*A small portion of sex lure is placed on the wick suspended inside the trap. Moth enters small opening, drops into container at bottom of trap when overcome by cyanide gas.*



*Cyanide is used as the killing agent -- hence the lock for safety.*







# CONTROL ACCOMPLISHMENT REPORT

Program Pink Bollworm .

Fiscal Year 1963

State	INSECTICIDE		HERBICIDE	MECHANICAL
	No. Acres Treated Ground	Air		
Arizona	0	4,757	0	373,187



# REGULATORY ACTIVITY REPORT

Program Pink Bollworm

Fiscal Year 1963

STATE	No. Props.	INSPECTION FOR CERTIFICATION		COMMODITY LOTS TREATED					
				Fumigated			Heated		
				Cotton Prod.	Trans- ports	Mach. & Eqt.	Cotton Prod.	Mach.& Equip.	Other
Arizona	5,320	7,171	0	2,305	16	12,692	1,283	12,357	1,285,719
New Mexico	67	0	0	404	0	63	177	0	3,564
Totals	5,387	7,171	0	2,709	16	12,755	1,460	12,357	1,289,283
									2



# SURVEY AND DETECTION REPORT

Program Pink Bollworm

Fiscal Year 1963

State	Number Properties Surveyed	Bushels	Number Acres Surveyed	Number Traps in Use	Number Positive Specimens	Number Properties Infested	Number Acres Infested
Arizona	230	214,263	11,739	79	1	15	721
California	1,500	37,507	242,490	21	-	-	-
Nevada	24	187	3,557	7	-	-	-
Totals	1,754	251,957	257,786	107	1	15	721





# Pink Bollworm

*DEPENDABLE WORK REQUIRES  
SAFE WORKING CONDITIONS*



*PBW moth separation lab showing special venter hoods used to protect workers from moth scales, dust particles, and fumes.*



*Face mask worn in the PBW separation lab to protect worker from inhalation of scales and other dust particles.*



*Gin trash machine -- note SAFETY FIRST decal and safety guards over moving parts.*



# SUMMARY OF ASSOCIATED ACTIVITIES

Program Pink Bollworm

Fiscal Year 1963

STATE	PUBLIC MEETINGS ATTENDED	PRESENTATIONS					EXTENT THESE AIDS WERE USED				SPECIAL REPORTS
		TALKS	SLIDES	FILMS	RADIO	TV	EXHIBITS	BUL.	CIR.	INFEST. MAPS & POSTERS	
Arizona	8	4	4	1	1		1		2902		723
California	2	2	2	2	10	12	1		1780		
Nevada	2	1							4		3
New Mexico	1						1		3000		1
Total	13	7	6	3	11	12	3		7686		727



## Plant Pest Survey

### Cooperative Economic Insect Survey

The number of cooperative agreements in the 11 western states remained at seven during the fiscal year. However, one of the contract states was without a Survey Entomologist for the full period. In another state the Entomologist resigned on April 30 to accept work elsewhere. A successor had not been chosen by the end of the report period.

This program pertains principally to the gathering of current insect information by entomologists and other qualified agricultural workers. Such information is intended to be used promptly within the state from which it is gathered and, at the same time, to be of help in alerting neighboring states to the economic insect conditions as they develop. Reports from all states continued to improve, and states without contracts were especially cooperative in submitting complete and prompt reports.

A series of four insect detection workshops was sponsored by state cooperators during the month of April, with Plant Pest Control participating. These workshops were designed to (1) encourage participation in the cooperative detection and survey program; (2) demonstrate the need for detection in all areas of our country; (3) demonstrate need for effective survey methods and their application; (4) emphasize what insects to look for; and (5) stress where to report findings. The workshops were held at Sacramento, California; Yakima, Washington; Laramie, Wyoming; and Albuquerque, New Mexico. A total of 288 persons attended the four sessions.

### Beet Leafhopper (*Circulifer tenellus*)

Surveys for beet leafhoppers were made in the spring-breeding areas of southern Utah and Nevada, southeastern California, and southwestern Arizona. These surveys are made in late January and in March as a service to the growers to the north who raise crops susceptible to the curly top disease, spread by this insect. At the completion of each survey, brief summaries of findings are immediately prepared and distributed to appropriate state agencies for use within states as deemed necessary.

Southern Region personnel conduct similar surveys in the Texas-Oklahoma spring-breeding areas and include a portion of southeastern New Mexico in their schedule. Their findings are reported in a combined, biregional statement.

For several years curly top has caused severe losses in sugar beets in the Big Horn basin area of Washakie and Big Horn Counties, Wyoming. At the request of state officials, Regional PPC personnel participated in

surveys, which resulted in insecticide being applied to control the beet leafhoppers in weedy host growth, principally Kochia sp., bordering fields, on ditch banks, roadsides, and wasteland areas. Approximately 4,000 acres were treated, using malathion applied by aircraft. Results were excellent.

A survey of overwintering beet leafhopper adults and host plants in extensive breeding areas in southwestern Idaho was made during March and April. This was followed by a second survey in May to determine nymphal populations. The adult surveys indicated that both host plants and adult beet leafhopper populations were much below the levels of previous years. This situation, coupled with subsequent weather conditions unfavorable to beet leafhopper survival, resulted in low nymphal populations. No control was considered to be necessary.

#### Potato Psyllid (Paratrioza cockerelli)

As a service to growers in adjacent and northern states, Regional personnel make a survey each spring, usually in March, in the spring-breeding areas of southwestern Arizona and southeastern California. This survey is to determine the adult population and host availability, thereby giving some basic information on which to indicate the pest's potential to move north and become a threat to crops susceptible to psyllid yellows. A similar survey is made by Southern Region personnel in states bordering the Western Region on the east. During the course of that survey the Southern Region includes a portion of New Mexico.

Separate reports are prepared to cover each area surveyed, and they are given immediately to appropriate state agencies for their use.

#### European Pine Shoot Moth (Rhyacionia buoliana)

Division personnel working with state cooperators assisted in the inspection of nurseries for European pine shoot moth in Portland, Oregon, and environs, Salt Lake City, Utah, and vicinity, and pine nursery stock establishments in Idaho. During this inspection program no pine shoot moth infestations were discovered at any nursery. However, the Oregon Department of Forestry, during the course of an intensive pine shoot moth survey in Portland and adjoining areas, found several infested trees at a few locations outside of nurseries. These trees were immediately removed and burned.

The Washington State Department of Agriculture did not request survey assistance from the Division during 1963. In heavily infested areas in the Puget Sound territory, the State Department of Agriculture instituted a tagging system to control the movement of pines from nurseries. The Department of Natural Resources, with the assistance of the U. S. Forest Service, again made surveys with crew units. Principally, these are to locate and destroy infected pines at scattered locations west of the Cascades. This will serve to inhibit the spread of the pest and eventually



may confine the infestation to the Seattle-Tacoma area. In Spokane County, where in 1961 four hundred infested pines were found and destroyed, there were no infestations found in 1962. During the 1963 spring survey no moth-infested trees were located.

#### Halogeton (Halogeton glomeratus)

Limited PPC activity was recorded from Nevada, Oregon, and Utah.

#### Insect Detection

Some detection surveys were made by PPC personnel as time permitted while conducting program responsibilities. Checks were made for the following important pests: citrus blackfly (Aleurocanthus woglumi Ashby) in Arizona; Mexican bean beetle (Epilachna varivestis) in Idaho; witchweed (Striga asiatica) in Arizona; range caterpillar (Hemileuca oliviae) in New Mexico; gypsy moth (Porthetria dispar) in California, Oregon, Colorado, and Wyoming (approximately 400 traps were exposed); harvester ant species in Nevada, Colorado, and New Mexico; imported fire ant (Solenopsis saevissima richteri Forel) in Arizona; and cereal leaf beetle (Oulema melanopa) in Arizona and Colorado.

#### Cotton boll weevil (Anthonomus grandis)

Field surveys were made for this pest and related species in California, New Mexico, and Arizona. Special attention was given to cotton-growing areas adjacent to Texas and Old Mexico, from which infested points it is feared introductions may occur. Most of the detection work was accomplished while performing pink bollworm activities. Arizona surveyors are especially alert for weevils when processing gin trash. In California, in cooperation with state and county agricultural departments, surveys are conducted in fields adjacent to areas known to support the native host plant Thurberii davidsoni.

#### Hall Scale (Nilotaspis halli Green)

This scale was considered eradicated; however, on May 6, 1963, PPC personnel making a routine and random inspection discovered five almond and two flowering peach trees infested. The find was on an isolated ranch property in Stilson Canyon, near Chico, California. The host trees on the property were not thriving, and no commercial quality fruits were produced.

Immediate intensive surveys of the property and adjacent areas were made, with no further infestation being found. Some 30 domestic, deciduous fruit trees; 143 escaped seedlings; and a few native Prunus subcordata were found, removed, and burned, and stumps were treated with a weedicide.

#### Golden Nematode (Heterodera rostochiensis)

An adequate and prompt survey program was made in Clatsop and Columbia Counties in Oregon, and in Grays Harbor and Wahkiakum Counties, Washington,

during the fall of 1962. This was done upon learning that potato varieties from some Scandinavian countries under golden nematode quarantine may have been surreptitiously introduced and were being extensively grown and distributed in the named areas. Soil samples were taken from all known commercial-producing potato fields in the four counties surveyed. These samples were processed and examined at a central point within the area. Results were negative.

#### Public Relations

Continued emphasis was placed on reaching the public to tell our story about Plant Pest Control. Division exhibits--both those provided by headquarters and those developed by Regional personnel--were further embellished to make some very attractive and impressive displays. Showings were made at ten state and county fairs in six western states. First place awards were received for the Division displays at the state fairs in Arizona and California.

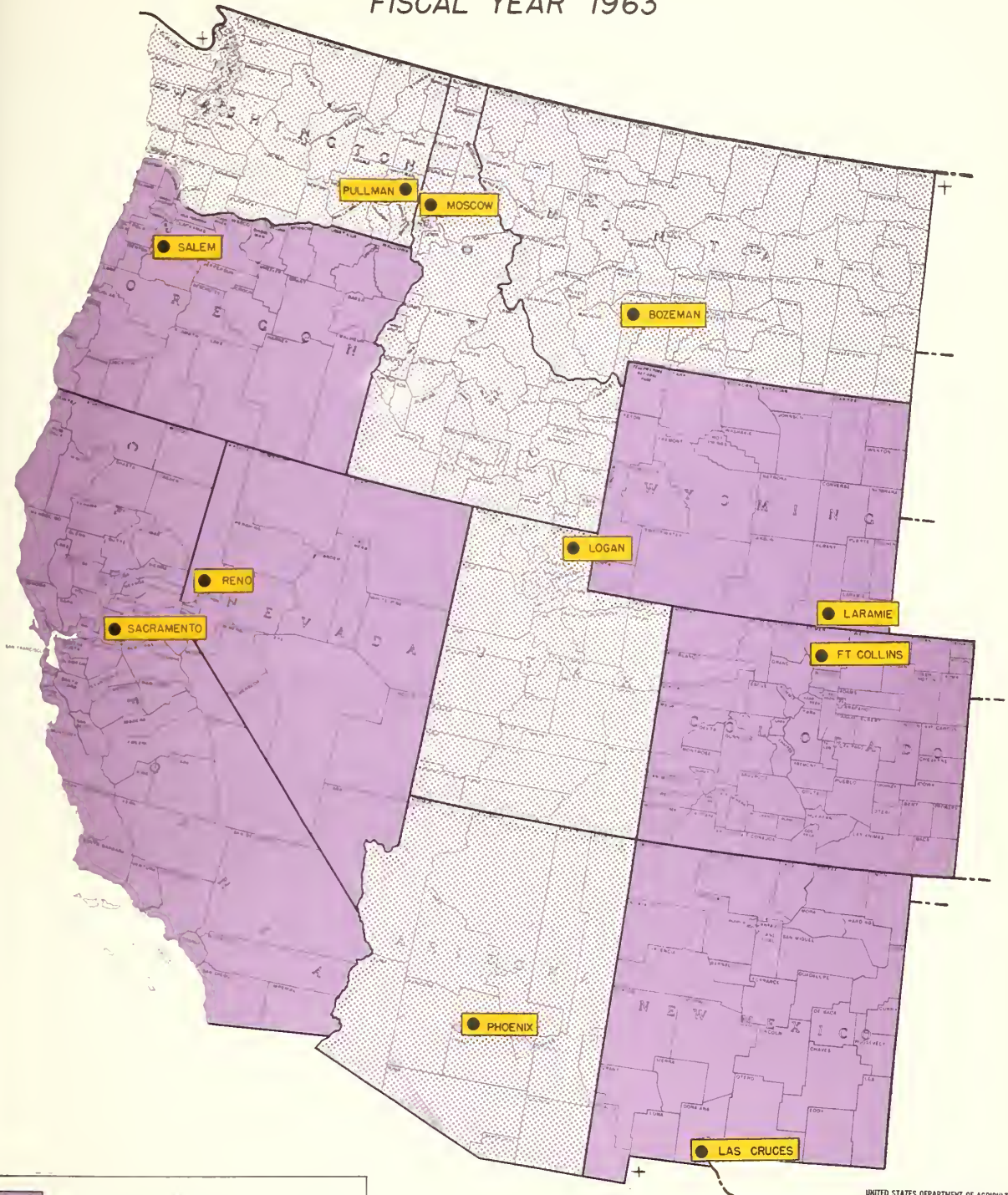
During the year many Division program movies were shown, and short subject matter films were released for use by TV stations. Personnel participated at numerous group meetings and many thousands of brochures and picture sheets were distributed.

#### Fruit Flies

General fruit fly trapping was done in two areas of Arizona--southern Yuma County, and at Nogales, Santa Cruz County. Both McPhail and Steiner traps were used in numbers to adequately sample the areas on a detection basis.

# COOPERATIVE ECONOMIC INSECT SURVEY

FISCAL YEAR 1963



UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
PLANT PEST CONTROL DIVISION  
WESTERN REGION

JUNE 30, 1963



State Survey Coordinators  
For Economic Insect Survey Reports

Arizona	Dr. James N. Roney, Extension Entomologist University of Arizona, Phoenix
California	Mr. Robert W. Harper, Chief, Bureau of Entomology State Department of Agriculture, Sacramento
Colorado	Dr. Leslie B. Daniels, Head, Department of Entomology, Colorado State University, Ft. Collins
Idaho	Dr. H. C. Manis, Head, Department of Entomology University of Idaho, Moscow
Montana	Dr. James H. Pepper, Head, Department of Zoology and Entomology, Montana State College, Bozeman
Nevada	Mr. Lee M. Burge, Director, Division of Plant Industry, State Department of Agriculture, Reno
New Mexico	Mr. Dallas Rierson, Director, New Mexico Department of Agriculture, New Mexico State University University Park
Oregon	Mr. Hugh Taylor, Chief, Division of Plant Industry State Department of Agriculture, Salem
Utah	Dr. George F. Knowlton, Extension Entomologist Utah State University, Logan
Washington	Dr. Horace S. Telford, Chairman, Department of Entomology, Washington State University, Pullman
Wyoming	Dr. Robert E. Pfadt, Head, Department of Entomology University of Wyoming, Laramie







Survey Entomologists

Arizona	Mr. Dale G. Fullerton Arizona Commission of Agriculture and Horticulture	Phoenix
California	Mr. Ronald Hawthorne State Department of Agriculture	Sacramento
Colorado	Mr. Leonard E. Jenkins Colorado State University	Ft. Collins
Nevada	Mr. Robert C. Bechtel State Department of Agriculture	Reno



# Beet Leafhopper

*A PPC DIVISION SERVICE—THE GROWERS' RESPONSE*



Cooperative surveys revealed overwintering BLH populations in range host plant areas adjacent to beet fields.



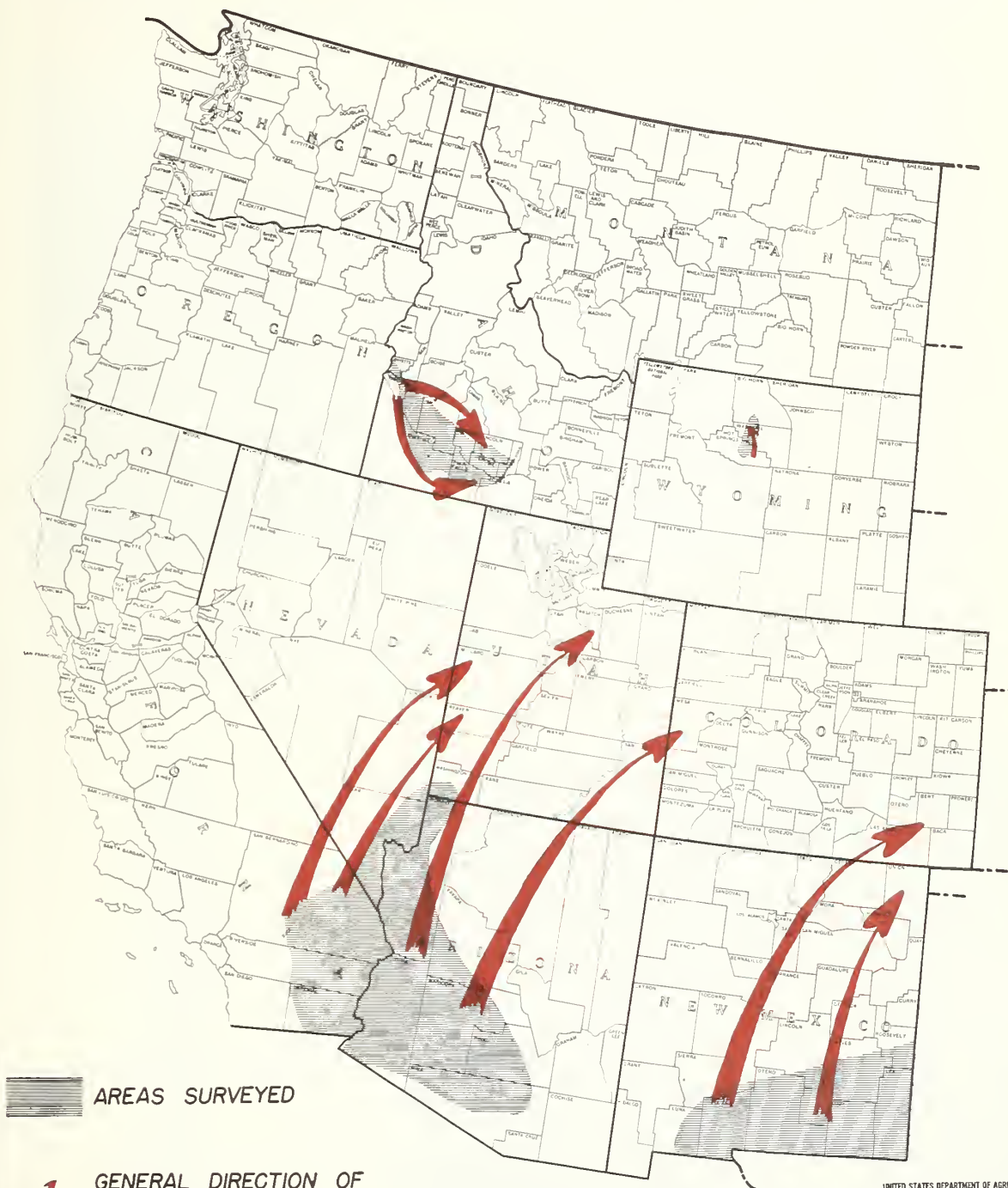
Loading Call-Air at temporary airstrip at site of application. Results of insecticide application were excellent.



Prompt followup action by Wyoming growers who, with State help, were applying insecticides within four days after surveys were completed.



# BEET LEAFHOPPER SURVEY



UNITED STATES DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL RESEARCH SERVICE  
 PLANT PEST CONTROL DIVISION  
 WESTERN REGION  
 JUNE 30, 1963





# SURVEYS

70

*A SERVICE TO GROWERS OF SUSCEPTIBLE  
FOOD CROPS IN NORTHERN STATES*



*Using a "Hills" cage to sample for beet leafhopper on desert host plants in the spring breeding areas in southeastern California.*



*Sweeping for potato psyllid on native matrimony vine, a host growing in large areas of southern Arizona and California.*



# SURVEY AND DETECTION REPORT

Program Plant Pest Survey

Fiscal Year 1963

Pest	No. Properties Surveyed	No. Acres Surveyed	No. Traps in Use	No. Hosts Examined	No. Samples Collected and/or Examined	Hosts Infested
Boll weevil	80	5,513		21,002		
Cereal leaf beetle	29	1,300				
Citrus black fly	1,828	6,024				
European chafer					32	
European pine shoot moth	32	20		1,082,215	1	
Gypsy moth			190			
Golden nematode	13	177			84	
Hall scale	6			345		7
Insect detection	2	80				
Mediterranean fruit fly			40			
Totals	1,990	13,114	230	1,103,562	117	7



# Public Relations <sup>72</sup>

## PLANT PEST CONTROL - A SALABLE ITEM



Division displays supplemented by supporting informative material were effectively presented at eight state and county fairs throughout the Region during FY 1963. The above pictured display received the first place award at Casa Grande, Arizona, in the Civic Display Division.

The exhibit pictured below was awarded a plaque at the 1962 California State Fair. The plaque was inscribed "Outstanding Educational Exhibit."







# SUMMARY OF ASSOCIATED ACTIVITIES

Program Plant Pest Survey

Fiscal Year 1963

State	Public Meetings Attended	P r e s e n t a t i o n s					Feature & News Stories	Extent These Aids Were Used		Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Printed Information	
Arizona	2	2	6	5	4	81	13	3	5,696	66
Calif.		3	3					1	6,207	
Colo.									47	
Idaho	2	2								
Nevada	4	3	3				3		73	4
Oregon	2	2								
Utah	3	8	10		2		1		815	7
Wash.	1								350	
Wyoming									43	
Total	14	20	22	5	6	81	17	4	13,231	77



# Safeguards

*PROVIDED FOR THE EMPLOYEES' PROTECTION*



Seat belts have been installed in all ARS and GSA pool vehicles -- many employees realizing the importance of seat belts have installed them in their personal cars.



Face masks, coveralls, gloves, or other safety apparel are supplied and used where the job presents a particular hazard.



Safety reminder in Phoenix, Arizona warehouse -- similar caution signs are used wherever deemed necessary.



















